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Exports and Imports

FLUCTUATIONS in exports caused largely by shipping availability make the statistics for one month of small comparative value. The figure of £230 million given in the Board of Trade returns as the total value of exports from the United Kingdom in April must therefore be considered against a longer period and price level changes also have to be borne in mind. The average for the first four months of 1951 is over £202 million a month, compared with £166 and £149 million for the corresponding periods of 1950 and 1949 respectively. This trend is apparent in the figures for the various Board of Trade categories of railway material, with the inexplicable exception of the railway carriage sub-group. The nature of railway material and especially of rolling stock however renders such comparisons misleading, given the special conditions of manufacture and shipment. The analysis by the Board of Trade of railway exports is illuminating, and notably as regards distribution of markets—though it is a pity that such important markets as Argentina and Brazil are not shown consistently. Of the 90 locomotives exported in April, only one-half was steam, with a somewhat lower proportion of steam locomotives in the 325 exported in the four months January to April. Nevertheless, although the average total value of all exports during this period, was some 20 per cent. above that for the first four months of 1950, the volume was only 3 per cent. up, because of the rise in export prices, averaging 15 per cent. Against this, imports in January to April of this year were some 7 per cent. above 1950 in volume and 40 per cent. in value, averaging £290 million a month, the result of a rise of 36 per cent. in import prices, or twice the rise in the price of exports. The details given of imports throw little light on possible effects on the railway industry in Britain; but it is clear from the general picture that a considerable increase in exports is imperative. In the case of the engineering and allied industries (such as the railway industry, which exports to the total value of £3 million monthly—a very fair proportion of the national output) it is hard to see how this can be reconciled with re-armament, and moreover with shortages of machine tools and steel.

South Wales Freight Traffic

DURING recent months British Railways have found it necessary to place temporary embargoes on certain types of freight traffic from South Wales. There have been delays in transit, and traders have become critical. The reasons for the congestion and the steps taken to remedy it were given by Lord Hurcomb in a speech at Swansea which is reported in other pages. Recent difficulties in working have been due largely to an increase in the volume of traffic and to the fact that this additional load has not always followed the pattern of movement for which the railways were originally laid out. Coal class traffic from South Wales last winter to inland destinations showed an increase of 45 per cent. on the previous year, resulting from U.S.A. imports and the fuel distribution arrangements, while there has also been a substantial increase in steel traffic. Shortage of staff due partly to abnormal sickness has been another contributory factor. Today, however, the number of freight trains over the three main routes out of South Wales is 10 per cent. higher than a year ago, greater use is made of alternative routes, weekend working has been increased, and other measures have been taken making it possible to raise the more drastic embargoes.

International Railway Research

FURTHER co-operation by the railway administrations of Europe and contiguous countries in the face of their common difficulties is shown in the work of the Office de Recherches et d'Essais (O.R.E.) recently set up under the ægis of the International Union of Railways. Its objects are: pooling of the means of research and of the results of research by member railway administrations; prosecution of certain joint investigations; and standardisation. The O.R.E. is controlled by a committee of representatives of member administrations, including Mr. T. M. Herbert, Director of Research, British Railways. Day-to-day management is in the hands of Mr. F. Q. den Hollander, President of the Netherlands Railways, who has provided an office at Utrecht, where technical matters are dealt with by engineers seconded from member railways. Part-time reporters prepare studies on the present position and the need for further research in subjects such as pantographs, insulated joints, stability of bogies and vehicles at high speed, and diesel locomotive transmission. A sub-committee also is preparing designs for standard wagons. Whereas, in the past, rivalry may have been an obstacle to international co-operation of this kind and to realisation of what has for some years been achieved for instance on an almost continental scale in India, the application of scientific method to solution of problems is of interest to all railways, and, with the virtual absence of commercial competition between them, there is no obstacle to co-operation in technical matters of common interest to their mutual advantage. It is to be hoped that they will support and make use of this new organisation to the fullest extent.

Locomotive Engineers' Summer Meeting

A VERY successful summer meeting of the Institution of Locomotive Engineers was held this week. The meeting comprised a series of functions which included a reception at the Institution of Electrical Engineers on Tuesday, after which Mr. W. A. Newman, Chief of Motive Power & Rolling Stock & Research Department, Canadian Pacific Railway, delivered the Sir Seymour Biscoe Tritton Lecture, during which he referred to the effect of changing economic conditions in Canadian railway operating and equipment. The members inspected British Railways standard locomotives and coaching stock at Marylebone Station on Wednesday; later that day a dinner was held at the Trocadero Restaurant, when the members were received by the President, Mr. R. A. Riddles. On May 24 members were taken by special train to Eastleigh Carriage Works, where they inspected the latest methods of construction of British Railways standard coaches, and afterwards went on to Southampton Docks by motorcoach to witness the departure of the R.M.S. *Queen Mary*. After a buffet lunch members inspected the docks and Ocean Terminal.

Improved Service to the Continent

THE difficulty of replacing war shipping losses and of renewals, the cost of operating marine services (despite the high fares charged) and a certain loss of passenger traffic to the air have been largely responsible for the disappearance since the war of some long-established cross-Channel services. One of these, the 4.30 p.m. (or thereabouts) from Victoria was revived last summer, but with a connection only to Switzerland and beyond; the last day service to Paris left Victoria at the early hour of 2 p.m. It is good to see that this summer's Continental services of the Southern Region, of which some details are given elsewhere in this issue, provide for a Paris connection off the 4.30 p.m. service, with a corresponding return working. To Paris, the service, with allowance for the additional time now required by the British embarkation formalities, is at least equal to pre-war. The railcar connection between Boulogne and Paris is an innovation, though one was provided for the few civilian passengers travelling *via* Calais during the "phoney war" of 1939-40. Passengers to Paris however by the 4.30 p.m. have always been relatively few.

Canadian Railways Seek Further Rate Increase

THE Canadian railways have asked for a new freight-rate increase of 14 per cent.—about $64,000,000 a year—to cover the cost of a 40-hr. working week starting on June 1, higher prices of materials, and wage increases additional to that obtained by the main body of employees last year. The railways propose that the main wage increase be met by a five per cent. increase in rates which they asked for in December and is now being considered. The 40-hr. week was gained by the "non-running" employees—not directly concerned with operating—who will have the same pay as they now receive for working 48 hr. In addition, train employees have obtained hourly increases in the last few months; the cost of these, not specifically set out in the application, is embodied in the 14 per cent. rate increase. The C.P.R. estimates an annual "deficiency" in revenues of $35,085,000 for 1951 if rates are not raised to meet the forthcoming wage increases. If both the five per cent. and the 14 per cent. applications are granted they will bring the cumulative effect of post-war general rate increases up to 72 per cent on the types of traffic to which they apply. The first increase, of 21 per cent., granted in 1948, was followed in 1949 and 1950 by three smaller increases adding up to another 20 per cent.

The "Rheingold Express" Returns

A FEATURE of the German Federal Railways summer services is the reintroduction of the "Rheingold Express," running for the first time since before the war from the Hook of Holland (in connection with the Harwich steamer) and Amsterdam through the Rhine valley to Basle, Chur (for the Engadine), and the Gotthard line. At Cologne, a portion from The Hook is detached and worked by another service to Frankfort, Nuremberg, and Vienna *via* Passau; in addition, a through coach from The Hook is detached at Mannheim and runs *via* Stuttgart to Munich, Innsbruck, the Brenner and Merano. Like its pre-war namesake, the new "Rheingold" is painted in a distinctive livery. It now however consists of ordinary coaches of all three classes, as offered to the Mitropa saloon cars of before the war, and is necessarily somewhat slower, though, in prevailing circumstances, smartly timed over many sections—and further accelerations may be expected next year. The German Federal Railways have shown much enterprise in reviving the Rhine route to Switzerland and in developing a route for tourist traffic from Britain to the Tyrol and Dolomites.

Light Railbuses Saving Money

THOUGH perhaps not entirely new in principle, the application of 70 railbuses to a variety of passenger traffic on the German Federal Railway seems to put a new complexion on the possibilities of such units, which hitherto have been used only in ones and twos by railways having very special local problems. Moreover, as far as we know, this is the first deliberate attempt to put an ordinary road bus on rails and make the minimum number of technical charges; certainly it is the first on any large scale. The Uerdingen diesel railbus seats 60 passengers on an empty weight of about 13 tons, and, despite an engine of only 110 b.h.p. continuous output, has proved capable of hauling a special light trailer over 1 in 35 grades. The technical and traffic features of these vehicles are dealt with in the June issue of our associated monthly contemporary *Diesel Railway Traction*; but it is worth remark here that the first ten of these railbuses, delivered between July and September, 1950, had all covered between 56,000 and 62,000 miles by the end of April, 1951. A further 60 on order are to be delivered to the German Federal Railway by the end of this year, for the all-in working costs of 65 to 90 R.pf. per km. have proved too attractive to permit of any delay in further application.

New Pennine Tunnel

SUCH has been the durability of the major works dating from the early days of railways in Britain that many have seen a century's service without needing much more than strengthening to deal with increased traffic. The necessity therefore to build Woodhead New Tunnel, double-track and three miles long, under the Pennines, to replace the existing obsolete twin single-line bores of 1839-52, is the more remarkable, and a reminder of the vast expenditure to which railways may be put in renewal alone. Some account of the completion of the pilot tunnel is given elsewhere in this issue. The new tunnel has been associated with, but not actually occasioned by, the electrification of the Manchester-Sheffield-Wath lines of the former L.N.E.R., initiated before the war. Only the heavy maintenance costs of the present tunnels, and heavy traffic, consisting largely of South Yorkshire coal for industrial Lancashire for which no adequate alternative route exists, could justify the capital expenditure during a period of financial stringency. The contrast with a century ago is great, not only in the speed of the work, with the help of modern machinery—(the first bore took six, and the second five years to complete, against three scheduled for the new tunnel)—but also in the living accommodation and amenities provided for the workmen.

Rail Wear Experiments

IN an editorial note in our December 1, 1950, issue, there was a reference to the fact that in the proceedings of the 1950 International Railway Congress, no reference was made by the reporters on permanent way to the possibility of increasing rail wear by means of alloys, heat-treatment, or both. It is therefore interesting to learn, in a report on the research activities of the American Railway Engineering Association, that American railways,

working in conjunction with U.S.A. steel makers, are experimenting extensively in these directions. The Bethlehem Steel Company has been taking rails of standard A.R.E.A. high carbon composition, and, after the usual controlled cooling, has been reheating and oil quenching them to provide abrasion-resisting rails for curves. This method differs from the heat-treatments common in Europe before the war—the Sandberg in Britain, Neuves Maisons in France, and Maximilianshütte in Germany—for these all relied on water for partial or complete quenching treatment. The United States Steel Corporation, after making 350 experimental casts of steel, has evolved an alloy steel of manganese-chrome-vanadium quality, known as the C-V rail. Rolling load tests show that this quality withstands five times as many of the severe rolling load tests as the standard rail without showing any tendency to "shell."

French Railways Summer Services

ELECTRIFICATION of a further section of the French National Railways, that from Paris to Laroche, inaugurated last autumn, has again been the cause of the chief passenger train accelerations in the summer timetable, effective from May 20. There are now two runs from Paris to Dijon, 196 miles, in 152 min., those of "Le Mistral" (which reaches Marseilles, 536 miles from Paris, in 8 hr. 36 min. with four stops) and of the evening express to Lyons, 318 miles, reached in 5 hr. 6 min., with four stops, including changing from electric to steam traction at Dijon in both cases. Other schedules from Paris to Dijon range from 176 to 192 min. non-stop. Nice, 676 miles, is now 13 hr. from Paris by the "Blue Train," whilst the "Paris-Côte d'Azur," very little slower, is now a very heavy train conveying all three classes, connecting at Nice on certain days with a day boat to Corsica. Acceleration of the "Rome Express" and "Simplon-Orient Express" over the French and other railways concerned has brought Rome (*via* Turin and Genoa) within 20½, and (*via* Lausanne) Milan within 12, Belgrade within 35, and Istanbul and Athens both within 72 hr. of Paris.

In the South-Western Region, the evening express to Bordeaux covers the 360-odd miles in 5 hr. 37 min., with three stops, and the "Pyrénées-Côte d'Argent" in 6 hr. 34 min., the latter a heavy train, which connects at the Spanish frontier with the Talgo train to Madrid, as recorded in *The Railway Gazette* February 16 issue. Western Region accelerations (mainly to Brittany and the Biscay coast resorts) include reduction of the Paris to Le Mans standard timing to 125 min. for 131 miles (electrified), and a railcar run from Paris to Trouville-Deauville, 137 miles, in 124 min.

A main development in the Northern Region is the restoration of the connection to Paris by the 4.30 p.m. service from London *via* Boulogne, by means of a railcar from Boulogne Maritime to Paris Nord, 157 min. being allowed for the 158 miles; the return working leaves Paris Nord at 15.20. The trains conveying the through vehicles between Calais and Paris Lyon, the Riviera, Italy, and so on, now call at Paris Nord in both directions. Between Paris and Brussels the "Oiseau Bleu" and "Etoile du Nord" cover the 194-odd miles in 202 min. The "Nord Express" has been accelerated over the various railways, with journey times of slightly over 24½ hr. from Paris to Copenhagen, of 37½ hr. to Stockholm, and of 38 hr. from Paris to Oslo, between which last city and Paris through "tourist" (tri-composite) sleeping cars of the Wagons-Lits Company will run in the high season. In the Eastern Region, the journey from Basle to Paris, 326 miles, is performed by two railcar sets daily in 5 hr. 17 min., with five stops. The "Orient" and "Arlberg-Orient" Expresses are accelerated by about one hr. in each direction between Paris and Vienna.

The general trend of the summer timetable is, besides acceleration, increase in the weight of many main-line trains and insertion of additional stops without deceleration (or even with acceleration), and increase in the amount of *couchette* services in night trains.

"Britannia" Class Pacifics at Work

THE test runs of one of the new standard "Britannia" class Pacific engines, reported elsewhere in this issue, were a convincing demonstration of the capabilities of the new class. From the times and speeds achieved, it would have been difficult even for an expert, travelling in the train, to have deduced that he was being hauled, not by a 105-ton Class "8" four-cylinder Pacific with a tractive effort of 40,300 lb., but by a considerably smaller 94-ton two-cylinder engine with a tractive effort of only 32,160 lb. The lower tractive effort was, perhaps, discernible at the starts, but once No. 70009 got well under way, the performance of the engine was brilliant. It witnessed to the fact that, in the last analysis, boiler power counts for more than cylinder power, and that the policy of the design staff of the Railway Executive in this direction is fully justified.

An unintentional tribute was given on the up journey to both the boiler and the front-end design when, as a result of indifferent coal, the boiler pressure on the climb to Tring Summit fell from the rated 250 lb. to 190 lb. To compensate for this loss of power, cut-off was increased finally from 30 to 35 per cent., with the result that, despite low pressure, speed did not fall below 62½ m.p.h. So rapid was the recovery on the succeeding descent that, with cut-off brought back to 25 per cent. and the regulator, which up to then had been full open, now partly closed, in no more than 12 miles the speed had risen to 85 m.p.h. The tare weight of the train on this up run, from Rugby to Euston, was 441 tons, and the gross weight 470 tons; the schedule time of 94 min. for the 82·6 miles was cut to 87¼ min. inclusive of 4 min. loss by a permanent way check and 4¼ min. by a dead stand for signals on Camden bank, leaving a net time of 78½ min. for the run.

Perhaps the most notable feature here was the fact that the time of 48 min. 4 sec. for the 57·4 miles from Blisworth to Willesden was one minute less than the 49 min. pass-to-pass booking between these points of the pre-war "Coronation Scot" streamline train, which was limited in weight to 300 tare tons and hauled invariably by one of the more powerful Class "8" Pacifics. The average speed of all but 80 m.p.h. maintained for 16½ miles from Berkhamsted to Harrow showed commendably free running for a two-cylinder locomotive with 6 ft. 2 in. driving wheels. On the down journey also there was some excellent work, particularly the steady 64½ m.p.h. maintained up the whole of the 1 in 335 from Kings Langley to Tring, with a gross load of 515 tons; this required full regulator and 29 per cent. cut-off.

The test runs were part of a demonstration which included a test of another engine of this class on the British Railways locomotive testing plant at Rugby. Here it was demonstrated that a "Britannia" class Pacific can maintain a steady 75 m.p.h. on the level with a 500-ton train on 40 per cent. cut-off, with 1,550 h.p. developed continuously at the driving wheel rims. As to economy, it was mentioned by Mr. R. A. Riddles, Member of the Railway Executive for Mechanical & Electrical Engineering, that when no more than a fortnight out of the shops the engine *Britannia* had taken a 443-ton train from Crewe to Carlisle and back on a coal consumption of no more than 38·3 lb. to the mile, or 3·1 lb. per d.h.p.-hr., and that during this test the final 3½ miles at 1 in 75 to the summit had been climbed at an average speed of 45 m.p.h. and with an average d.b.h.p.-output of 1,548. The biggest power output yet recorded with one of these engines has been 2,100 h.p. at the wheel rims at an equivalent speed of 40 m.p.h. and a cut-off of 45 per cent.

With these excellent performance figures there are associated both the simplicity of design that should greatly facilitate maintenance, and the careful reduction of weight and cross-sectional dimensions that make these locomotives suitable for a route with such weight and clearance restrictions as that of the former Great Eastern main line between Liverpool Street and Norwich. But what commands the greatest interest is the co-operation between the design and operating departments that has enabled the

latter, with the new locomotive class evolved by the former, to compile a timetable which will give East Anglia the best and fastest train service which has ever been enjoyed by that part of the country.

Royal Commission on Canadian Transportation

As briefly recorded in our issue of March 30 last, the Royal Commission on Canadian Transportation recently completed its report, which was tabled in the Dominion House of Commons by the Prime Minister on March 15. The report is the outcome of two years' enquiry, involving hearings in all ten Provinces and the consideration of 143 formal submissions and more than 24,000 pages of evidence and argument. The report itself is a 300-page document containing some 200,000 words. The terms of reference of the enquiry included *inter alia* investigation of the geographical and other disadvantages of the transport services in all parts of Canada. They also called for recommendations on all questions of economic policy within the jurisdiction of Parliament arising out of the operation and maintenance of national transportation, including (*a*) possible changes in the Railway Act; (*b*) the Canadian National Railways capital structure; (*c*) railway accounting and statistical methods and (*d*) the Canadian National-Canadian Pacific Railways Act.

The Commission's recommendation regarding (*b*) was dealt with at some length on page 512 in our issue of May 4. It therefore needs no further consideration here, except to remind readers that it rejected the Canadian National Railways $1,000 million plan for recapitalisation, and devised an alternative scheme of financial reorganisation expected to give the undertaking a stable capital structure.

Among the more important other recommendations is a broad programme of freight rate equalisation throughout Canada, including uniformity of class and commodity mileage rates and a uniform carload mixing rule. This decision meets the complaints of all the Provincial Governments—except Ontario and Quebec, which were not appreciably concerned—that outlying Provinces are at a considerable disadvantage due to the long distances separating them from their sources of supply and from their markets. Existing rates are higher in the west than the east. The recommendation aims to "treat all citizens, localities, districts, and regions alike" in the freight rates.

As another step towards easing the burden of rates, the Commission recommends that the long unproductive sections on both the transcontinental lines between Sudbury and Fort William should be treated as necessary links, both for commerce and national defence, between the country's two main areas, east and west. It therefore suggests that the annual maintenance costs—but no part of the operating costs—should be borne by the Federal Government; the estimated annual sum involved is some $7,000,000. Moreover, to lighten the impact on various commodities and long-haul traffic, substantial modification of the straight percentage rates increase in future general cases is recommended. Before leaving the subject of rates, it may be noted that the Commission rejects an amendment to the Railway Act proposed by the Canadian Pacific Railway, requiring the Board of Transport Commissioners to establish a rate level sufficiently high to provide a fair return upon C.P.R. investment in railway property. The Royal Commission considered that such a statutory requirement could not always be implemented, and that rate fixing must be left flexible at the discretion of the Board.

The most far-reaching recommendation of the Commission, however, is that the three existing bodies, the Board of Transport Commissioners (concerned with railways), the Air Transport Board, and the Canadian Maritime Commission should be replaced by a simple authority. Its primary duties would be to co-ordinate and integrate the various transport agencies under Federal jurisdiction, and to regulate inter-provincial and international highway transport. In effect, the railways would still have to meet road and air competition, but it would be controlled competition, and all forms of transport would have to consider the needs of the nation as a whole. The Commissioners disagree with the suggestion that the Board of Transport Commissioners should be responsible for fixing railway wage rates and participate in wage negotiations.

Whilst noting an agreement in principle between the railways and the Provinces on accounting procedure, the Commissioners recommend that the Railway Act be amended so that the Board can prescribe a uniform classification and system of accounts and reports for rail items for both railways. Other decisions of the Commission are that railways should be allowed greater freedom regarding the closing of lines, where other forms of transport provide adequate substitutes, and that the national transport policy should continue to ensure the efficient and economic operation of the Canadian Pacific Railway under private enterprise. The report states that its recommendations for the reorganisation of the C.N.R. financial structure "will provide the C.P.R. with the protection to which it is entitled and which it needs if it is to continue to function as a healthy and vigorous private corporation."

Other decisions embodied in the report are that if passenger fares cannot be raised sufficiently for that traffic to pay its own way, the burden must fall on freight traffic; the Federal Government should not subsidise passenger traffic. Railways should be permitted to run road services; there is no evidence that such services would stifle competition. The Commission finds no reason to recommend either unification or public ownership of all railways in Canada. Nor can it agree to the railways' proposal that rates for the carriage of mail and military personnel and equipment should come under the jurisdiction of the Board of Transport Commissioners. The Commission considers that the Canadian National—Canadian Pacific Railways Act of 1933 hes yielded economies in excess of $1,000,000 annually and eliminated wasteful competition.

Lightweight Coach Testing and Production Methods

In our issue of April 27, we discussed editorially the salient practical and theoretical features in the design of the new lightweight electric motor coaches with load-carrying bodies recently designed and built by the Metropolitan-Cammell Carriage & Wagon Co., Ltd. These coaches are the subject of a serial article, the first two parts of which have already appeared in these pages, and the third is published in this issue. We also explained the reasons for the comprehensive series of tests to which they were subjected, and mentioned the method of test loading applied in a special test rig. This rig is completely free from fixings to floor or walls, thus allowing the whole to move slightly under load and ensuring a final position free from extraneous bending moments. The hydraulic jack, exerting horizontal buffing thrusts up to 150 tons, is built into one of the main end-loading beams, which is braced to a similar one at the other end by tie-bars; the horizontal load can be applied directly either to central or side buffer springs. The separate and combined loads applicable to the structure are equivalent to (1) tare load, (2) seated passenger load, (3) crush passenger load, (4) dense crush passenger load, (5) crush passenger load *plus* 20- to 100-ton buffing loads, and (6) tare *plus* 100-ton horizontal load.

Stress values were obtained by using wire resistance strain gauges arranged in circuits of the Wheatstone Bridge type. In the main test programme alone no fewer than 422 active gauges were used, and these were wired to three recording units. Batteries were installed to supply direct current for the testing, as irregular loads, such as arc-welding, might be expected to cause surges in the mains supply current. A number of other measures were also taken to ensure accuracy including the siting of the rig to avoid all daughts, large temperature changes, and extraneous vibrations, and all gauge positions were ground, cleaned with emery cloth and degreased before the gauges were applied.

After obtaining a general picture of the stress and deflection characteristics of the structure under these main

tests, a further series of tests was made by concentrating gauges round points of special interest, so as to complete the information regarding both general and detailed stress distribution. Full records were also made of deflections at all important points. The final results of this comprehensive series of tests were very satisfactory, and reflect great credit on those responsible for the design; they also clearly demonstrate the ability of the structure to cope with all loads to which it is likely to be subjected in service.

Many of the production methods used in the assembly of these motor coaches are of interest. The structure is built up as a number of large component sub-assemblies, and every stage in production is carefully jigged and inspected to insure interchangeability of parts. The roof, bodysides, floor structure, and bodyends are each fabricated in its respective shop or bay, and all are then erected as the coach shell. The roof is built up complete as one unit in a jig to take the full 68-ft. length. The bodysides are constructed in a number of sections extending between double-doorways, and the floor structure as a number of welded sub-assemblies without the solebar; the latter, which runs the full length of the car in one piece, is fabricated separately and is included only in the final assembly. The various welded sub-assemblies are stress relieved before final erection by bolting and riveting.

Each car is individually inspected and tested for roadworthiness, after completion, and train sets are also tested to ensure efficient braking, continuity of electrical circuits, and the various clearances. In fact, no pains have been spared to assure the success of these load-carrying-body vehicles. To the Metropolitan-Cammell administration; to the Consulting Engineers, Messrs. Rendel, Palmer & Tritton; and to all concerned great credit is due for the initiative displayed in striking out on lines new to British railway coachbuilding, and for the unprecedented extent of the preliminary preparations, calculations, designs, and tests leading to carefully thought-out production.

Track Maintenance and Renewal

A PAPER entitled "Methods of Effecting Economy in Track Maintenance and Renewal," presented to the Institution of Civil Engineers on March 6 by Mr. E. C. Cookson, Assistant Engineer (Permanent Way), Western Region, covers effectively all modern aspects of this wide subject as practised in the United Kingdom.

On British Railways the small permanent gang with a specified mileage of track is still considered the most suitable for general maintenance. Methods of assessing gang strength varied considerably among the former companies, but a formula is now under review, in which the basic manning is 2,000 yd. of single track per man. It appears, however, that this figure is quickly lost in a multitude of necessary adjustments to meet such considerations as dense traffic, electrification, off-track work and exceptional duties of all kinds. In rural areas two or three small gangs are often amalgamated under one ganger with a sub-ganger and a patrol-man, who shares regular track inspection with the ganger.

As a further development of this method, several proposals have been made, which, though differing in detail, all have a basic principle dealing with about 50 geographical miles of track, at present usually maintained by ten length gangs totalling some 85 men. It is proposed to reduce existing gangs to a ganger and two men for track inspection and light day-to-day repairs. On- and off-track maintenance would then be the duty of mobile gangs equipped with all types of up-to-date light mechanical appliances, such as pneumatic compressors and tools, ballast cleaners, track slewers, welding and measured-packing equipment, creep adjusters, and Matisa or other tampers. The strength of each mobile gang would be 35 men, and it is expected that a saving of 17 men would result from their employment; on the other hand the cost of annual replacement of plant has to be considered. These mobile gangs would be conveyed to the work site by motor trolleys and trailers, signalled as trains, or by road vehicles.

A detail emerging from discussion of types of stronger track necessary to carry heavier axle-loads at faster speeds is that the cost of an additional sleeper per rail length is roughly the same as that entailed by adding 6 lb. per yd. to the rail weight at present prices. In comparing hardwood and softwood sleepers, the paper points out that the longer life of the former may be offset by abrasion on the under-sides of hardwood sleepers, resulting from the failure of angular ballast to get a proper grip on them and the consequent vibration set up. Such abrasion has been known to reduce the thickness of a sleeper from 5 in. to 3½ in. Steel sleepers of various types laid in considerable numbers between 1929 and 1936 have generally proved to last little or no longer than good-class timber sleepers. Moreover, comparatively few steel sleepers removed from the track are fit to be relaid even in sidings. We are reminded that concrete as well as steel sleepers are unsuitable for track-circuiting and are also liable to abrasion like hardwood sleepers. Their cost is high and their weight requires additional manpower for handling in the absence of mechanical means.

In assessing the comparative values of the through-bolt and the coach-screw, the author of the paper considers that, though the latter may be stronger in the first stage—three being used as against two bolts—in later life the bolt, if properly looked after, makes for easier maintenance of gauge. He also draws attention to the fact that the spring spike used with F.B. rails has the disadvantage that, when the rail has to be replaced or turned due to excessive side-wear, it has to be drawn. He adds: "The whole trend of present experiments is to find a satisfactory fastening which will permit quick release of the rail without disturbing the fastenings of the base-plate to sleeper, and will provide adequate holding power during the whole of the first sleeper life."

His opinion is that on all important passenger lines, it is more economical to carry out complete track renewal with new materials at the end of the life of the sleepers and re-use the rails on new sleepers in a secondary line, than to re-sleeper and subsequently probably renew the rails on the second batch of sleepers. He considers that complete renewal gives a higher standard of maintenance and provides smooth running at the high speeds attained before the war; it also requires only one standard weight of rail instead of one for each class of line, as the worn heavy rail takes the place of the lighter standard rail otherwise used in secondary lines.

Among the means used for handling track materials at site, the paper mentions and illustrates the special braced and stiffened tubular sleeved skids designed for end-on unloading of sleepers between platforms and in tunnels, and for loading them when single branch lines are being taken up. The process of handling pre-stressed concrete sleepers for chairing and subsequent delivery on line, where they are unloaded by mobile crane working its way along the flat wagons, is described in detail, as are the various mechanical aids now in vogue for maintenance and renewal. In the main, small power-driven tools are preferred in this country, as opposed to the heavy plant favoured in America.

An interesting table prepared by careful study of work in progress is included in the paper, showing the relative manpower required for piecemeal and crane renewals with other mechanical aids. The reduction in manpower achieved to date for a 60-ch. length of plain relaying is evident from the table, reproduced below:—

Method used for relaying 60 ch.	Estimated No. of men	
	B.H. rail	F.B. rail
Relaying 60 ch. manually without mechanised aids ...	70	75
" " " using rail barrows only	65	70
" " " " " " and scarifier	55	60
Two-crane method without scarifier	40*	
One-crane " " "	35*	
Track-laying crane " "	35*	
Two-crane method with scarifier	30†	
One-crane " " "	25†	
Track-laying crane " "	25†	

* Excluding cranemen † Excluding cranemen and tractor driver

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

British Railways Lettering

May 11

SIR,—My letter in your April 27 issue concerning British Railways lettering has produced a quick reaction indeed. May we commence a brief reply with a quotation: "No doubt but ye are the people, and wisdom shall die with you. . . . Yea, who knoweth not such things as these?"

Your correspondents can easily find out what the dots signify! All my knowledge of lettering was derived from study of the works of Edward Johnston and Eric Gill. Who were their masters? Neither of them was an apostle of uniformity as such personal contact as I enjoyed 40 years ago quickly showed.

Good lettering must—for display purposes—be legible, yes, but also decorative, which the bare-boned style known as Gill Sans is not. How much more quality there was in Gill's first great essay in lettering for a prominent railway-station trader, based on the eternal style of ancient Rome!

Good lettering may well betray the tool with which it is executed. Gill Sans is "rule and compasses" lettering, scorn of the expert craftsman. I leave to others the appropriate reply to one correspondent's remarks concerning the G.W.R. lettering, but will merely express the opinion that if it did not attain the heights, it was attractive and carried a style—the British Railways sign, Gill Sans, superimposed on its pair of sausages is a poor thing by comparison.

I still hold the view that the sign at the foot of the steps to St. Pancras Station could no more have been designed by Eric Gill than by me.

Yours faithfully,

R. BARNARD WAY

3, Walden Road, Welwyn Garden

Impressions of French Railways

May 1

SIR,—I should like to trespass on your space again to give some further impressions of French railway travel. On a journey from Paris to Marseilles the strict punctuality was remarkable. The train pulled out of the Gare de Lyon at 8.40 prompt, hauled by a 2-D-2 electric locomotive, and consisting of 15 coaches and a baggage van. The 198 miles to Dijon were covered in 190 min., 5 min. ahead of schedule.

After a 15-min. stop in Dijon (10 min. allowed in timetable) the train pulled out on time hauled by a 4-8-2 steam locomotive type fitted with automatic stoker. From here there were innumerable permanent way delays caused by the electrification work in progress, but the train pulled into Lyons on time, having covered the 123 miles in 145 min.

The same punctuality was observed at Valence, Avignon, and Marseilles, although a Pacific locomotive, manually stoked, took over from Lyons. On the return journey the schedule is eased somewhat, probably as the gradient is slightly against the train up the Rhone Valley.

A pleasant feature noticed was the cleanliness of the toilets on the train; attendants replaced towels and liquid soap several times *en route*. In each direction the train was crowded in all three classes. The restaurant car crew worked very hard serving four lunches, two teas and three dinners. In spite of the high price for a meal (about 12s. 6d. with tip and beverage) most passengers seemed to take one in the restaurant car.

The electric locomotives on the Paris-Dijon section are very powerful; I estimated that about 3,000 amp. were drawn from the line on occasions. This is a very heavy current and necessitated both pantographs being up continuously and twin contact wires of heavy section, in addition to heavy compound catenary construction for the carriers. Whilst everyone has to admit that these locomotives are apparently on top of their work, easily maintaining a more than a mile-a-minute schedule with heavy trains, my researches lead me to believe that a high-voltage a.c. locomotive doing the same work would be at least 40 tons lighter, and, of course, a much lighter overhead equipment could be used.

It seemed to me that only a country like France whose economy was not wrecked by the last war could afford such a luxurious electrification scheme; certainly this country will not be able to afford it. But even France must be feeling some qualms about it as they are trying out the obviously cheaper 50 cycle, a.c., system on one of their lines.

Anyway, it has afforded me much pleasure in noticing that it has been recommended we in this country try out as an experiment a stretch of line electrified on the 50-cycle a.c. system. There is no doubt in my mind that this will prove to be more economical than any other system at present known.

Yours faithfully,

H. CHARNLEY

Brook House, Clayton-le-Woods, Lancs.

British Locomotive Livery

May 10

SIR,—A small private magazine is circulated by me to members of this club, on railway and model railway matters. The following extract may perhaps be of interest to your readers:

"British Railways: A year or two ago the public's 'own' railway boosted its new colours the public was asked its preference; many colours were tried out; columns in all the leading daily newspapers were devoted to the subject for weeks on end. Engines in tentative new colours were put on exhibition; there was a general Press blah-blah-blah all round.

"As a result it was finally declared from every conceivable source of publicity that express locomotives *would be blue*."

And now? One solitary seven-line notice in *The Railway Gazette*, of May 4, 1951; this I quote in full: "Mr. John Elliot, Chairman of the Railway Executive, has stated that when the present stocks of blue paint are exhausted all express locomotives painted in blue will be painted in the dark green livery already used for some classes."

Who on earth is it who assumes that a change to blue is of such intense public interest, whereas a subsequent change to green is of interest to nobody but the comparative specialist?

With compliments and good wishes to *The Railway Gazette*,

Yours faithfully,

CHRISTOPHER L. MORGAN

Rusper Railway Club, Oak House, Rusper, Sussex

Festival of Britain Train Services

April 30

SIR,—Most overseas visitors this summer will want to go to Windsor. From Waterloo by electric train, every 30 minutes in the off-peak period, takes 47 min. for 25 miles, but Waterloo is more of a city station. By a frequent Green Line coach service the time taken is 75 min. or more, but if one is leaving Windsor in the evening there is the likelihood of waiting in a long queue at the bus station some distance from the town centre.

By far the most convenient route from London is that from Paddington to Windsor Central, with the station opposite the Castle entrance. The fastest-timed runs (down to 30 min. for the 21 miles) have always been this way,

yet now, except in the peak period, the service cannot be called anything but mediocre and irregular, and with the journey time lengthened unnecessarily by waits at Slough to collect tickets, when this could be done on the rail motor car units on the run to Windsor.

My suggestion is that during the Festival there shall be a regular run from Paddington to Windsor every 30 min., operated by rail motor cars, or, better still, diesel railcars. With two or three stops the journey would take about 35-40 min., with the stops at Ealing and, or, West Drayton and Slough. With a four-track main line to Slough, finding paths should present no great difficulties. Diesel cars could be fuelled at Windsor, or the steam units at Slough.

The operation of diesel railcars close to London would provide an opportunity for overseas visitors to see them in use; perhaps this might lead to export orders. The experiment would also test the possibility of regular features of the kind.

Of the former railway companies the Great Western made the most extensive use of rail motor cars and diesel railcars. Perhaps this can be connected with comparatively few branch-line service withdrawals on the Western Region.

Yours faithfully,

R. G. R. CALVERT

C/o Westminster Bank Limited, Broadway, Bexleyheath

The "Leader" Class

April 2

SIR,—The recent correspondence on Southern Region Pacifics has been one of the most interesting series of letters published of late.

In it the "Leader" class locomotive has been mentioned once or twice. I wonder if an appeal could be made through your columns for more information about this design? I know of no official information or photographs published about this interesting class although it is now two years since the first one appeared from Brighton works.

As far as my information goes, only one "Leader" class locomotive has ever been steamed and that has been lying out of use in the open at Eastleigh since early November. If this locomotive design is unfortunately unsuccessful there may be an attempt in official quarters to forget that it ever existed, as has happened in the past with some experimental designs.

It seems odd that the extensive trials with this locomotive should appear to have been abandoned just when they appeared to be meeting with a fair measure of success. The locomotive made several apparently quite successful runs to Woking about last October.

As a matter of passing interest, ex-L.B.S.C.R. Atlantic 2039, "Leader" class "guinea-pig" engine, has just been broken up.

Yours faithfully,

J. B. LATHAM

18, Wheatsheaf Close, Woking

[We understand from British Railways that for various technical reasons the experiments with the prototype "Leader" class locomotive were not as satisfactory as had been hoped, and to obviate the expense which would be involved in continuing them for a problematical return, it has been decided not to proceed further with this novel design.—ED., *R.G.*]

Does the Diesel Pay Dividends?

May 7

SIR,—The March, 1948, issue of the New York periodical *Fortune* brings a detailed account of the Pennsylvania Railroad's predicament, resulting from "obsolescence" of its steam power. The readers are told that the coming of diesel power is going to pay "golden dividends, since diesel power is far more efficient than steam for negotiating mountains like the Pennsy's Gallitzin, top of the 20 miles east and west grades of the crossing of the Alleghenies."

After almost complete dieselisation of its main line passenger and freight service west of the electrified New York-Harrisburg section, the financial result of change from coal-burning steam power to oil-burning diesel power for 1950 stacks up as follows: gross operating revenue, $930,141,000, and net operating income, $38,420,677. (This includes dividends from the entirely steam-operated Norfolk & Western whose stock is owned to the tune of 43 per cent. by the Pennsylvania.) The operating ratio is 84·3 per cent.

The almost completely steam-powered Nickel Plate reports for the same year a total operating revenue of $146.923,839 and a net income of $21,019,542; its operating ratio is 64·5 per cent. The classical model of efficiency, the coal-burning, steam-powered Norfolk & Western reports a total operating revenue of $167,996,000 and a net income of $27,876,260 to help out the sorely beset diesel-loaded Pennsylvania. Its operating ratio is 69·3 per cent.

The largely diesel-powered New York Central reports for 1950 a gross operating revenue of $759,685,000 and a net income of $18,315,170. Operating ratio, 83·5 per cent. The predominantly steam-powered Chesapeake & Ohio reports for 1950 gross operating income of 318,676,866·56 and net operating income of $45,879,069·11. Operating ratio, 69·35 per cent.

The dividends for 1950 are:

Pennsylvania (Almost fully diesel-powered)	$1·00 per share
New York Central ... ,, ,, ...	$2·84 ,,
New Haven (Fully diesel-powered)	None
Norfolk & Western (Fully steam-powered)	$4·86 per share
Chesapeake & Ohio (Almost fully steam-powered)	$4·25 ,,
Nickel Plate ,, ,, ,, ,, ...	$45 on its preferred stock to pay off all arrears.

Now the Wall Street locomotive experts tell the investing public with a straight face "The diesel is 'the' dividend earner." They don't tell though for whom—the diesel manufacturers and mortgage certificate underwriters or the forgotten man, the railway stockholder? Your readers may judge for themselves.

Yours very truly,

V. F. FREEDNER

Buckingham Apts., Scarsdale, New York

Transport Accident Rates

May 6

SIR,—With reference to the article on Transport Accident Rates which appears on page 426 of your April 20 issue, while figures of passenger-miles are no doubt of importance to those responsible for running transport organisations I think that they cannot be taken to give a true picture of relative safety, as to my mind the most important factor is omitted—namely time.

Human beings are not yet completely mechanised, and we still measure the span of human life in terms of years, and not miles travelled or the number of actions performed. What concerns the individual is how long he can engage in any particular pursuit without getting killed or hurt.

Therefore, when considering the 1946-1949 figures in this light, and taking the average speed of air travel as being 200 m.p.h., it means that there was one fatality for every 75,000 passenger-hours flown.

Likewise, taking the average speed of rail travel to be 40 m.p.h., it appears that there was only one fatality for every 16,650,000 passenger-hours travelled by train. The real disparity between the two forms of transport is therefore vastly greater than when the subject is only regarded on a passenger-mile basis.

I admit that my figures for speeds as quoted above are guesswork, and I would not be surprised to hear that the average speed for air transport is over 200 m.p.h. and that for passenger trains less than 40 m.p.h., but this would only widen the gap between air and rail as regards safety. I have no figures for road and water transport available, but it would be interesting to have these included, and the safety of all four kinds of transport compared on a time basis.

Yours faithfully,

R. G. WALTON

190, Kedleston Road, Derby

XUM

THE SCRAP HEAP

Digging Up the Past

A considerable amount of antiquarian activity has been provoked by the Festival of Britain. Anyone who has not learned a lot about the year of the Great Exhibition, 1851, by this time must be a thoroughly unfashionable fellow.

On April 5, 1851, Mr. Marcus announced a Great Reduction of Fares on his Excursion Trains, "From London to Edinburgh and back for 37s.!" Sparing as we are of exclamation marks, we can't help approving these. What is more, passengers would travel "in enclosed carriages."

The first of these specials was to run on May 16, but on April 26 Mr. Marcus respectfully informed his public that his first train would not run before June 6. A surer way was by sea. Chief Cabin: 20s.: 30s. return. Deck: 8s. Twice weekly.—*From "A Scotsman's Log" in "The Scotsman."*

Rash Act by British Railways

That seems a specially shattering incident which delayed the start of play at Old Trafford by a quarter of an hour. The Surrey team had sent their kit on by train from Nottingham and it arrived at Central Station, Manchester, late at night. Next morning it was overlooked until the Old Trafford authorities telephoned to make inquiries, when a lorry-driver . . . was secured to deliver the missing baggage. Have British Railways never heard of Willow the King? Do they not realise that it is *lèse-majesté* to go slow with that monarch's impedimenta? Machine tools may be delayed, industrial consignments diverted and forgotten, even theatrical "props" may be allowed to languish at junctions on local lines, but to delay a county cricket match by a quarter of an hour is little better than an open act of irreligion.—*From "The Manchester Guardian."*

Great Hall at Euston Repainted

The Great Hall at Euston station has now been repainted in the colour scheme proposed by its designer, P. C. Hardwick, 105 years ago. The flat portion of the coffered ceiling is in light blue, the remainder of the ceiling and the walls in shades of cream, and the column shafts, which Hardwick intended to be marbled to represent red granite, are in Tuscan red with gilt capitals and bases. As a result of the renovation work, the sculptured panels around the Great Hall, which represent various cities and towns served from Euston, can now be seen clearly. Although not signed, the sculptures are believed to be the work of John Thomas.

Sculptured panel representing Carlisle in the Great Hall at Euston

Apathy?

Londoners appear to be apathetic about fare increases, if one can judge their reaction, or lack of it, by the falling membership of the London Passengers' Association. The association, which once had a membership of 400, is now down to about 100. At 1s. a year subscription, this is not likely to provide them with the finances to oppose the proposed increases at the hearing next month. Nevertheless the organisation is determined to put up a fight of its own. —*From "The Evening News."*

Fascination

An author calls the railways "fascinating;"
I'll waste no words in contradicting that,
Though many spend their time in execrating
And going for the old show with a gat.

It all depends on one's interpretation:
If human nature-study fills the bill,
You'll find a fertile field for speculation
At any point from Wick to Martin Mill.

So, look around you and it will be patent
The author isn't talking through his hat:
Take Bill, whose powers seem always to be latent—
"Spirit willing, flesh is weak" and things like that.

He's a fascinatin' feller, Bill the porter;
He's the lodestar of the transport firmament
And, although he does much less than what he oughter,
Put it down to his artistic temperament.

But, for every Bill, there's Tom and Dick and Harry,
Who slog along, oblivious of their tails,
Who do the railways' job of "fetch and carry"
And keep this dear old country on the rails.

When feebler forms of transport fold their wings up,
Too weak to cope, or mix their smooth with rough,
These are the boys who roll their jolly sleeves up
And get stuck in, although the going's tough.

There's fascination in the great expresses,
As, proudly, they perform their scheduled plan,
But the thing which charms me most, I must confess, is
The fascinating average railway-man.

A. B.

"You haven't got them yet"

[*Reproduced by permission of the proprietors of "Punch"*]

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Relaying on Pretoria Line

The Johannesburg-Pretoria line is being improved to provide more comfortable travel and accelerated services. The track, at present classified Ia, is being brought up to Class I standard, the highest on the system. Class I track has 2,376 sleepers and 2,200 cu. yd. of ballast a mile, or 264 more sleepers and 200 yd. more ballast a mile than Class Ia, and the maximum permissible speed is greater.

The line is being relaid with 96 lb. rails welded in 120 ft. lengths. The relaying began at the Johannesburg end and is proceeding at the rate of five miles a year; it should be completed to Irene, 25½ miles north of Johannesburg, by the end of this year. The whole line should be completed by March, 1953.

Branch-Line Doubling

The Oogies-Saaiwater section in the Witbank area is to be doubled. It will be the first branch in the country to be so dealt with.

The line between Oogies and Van Dyksdrif was begun in August, 1944, and its extension to Broodsneyersplaats was opened in October, 1950. Since then the transport demands of the coal industry in the area have outstripped the capacity of the single line. Several new mines are now reaching production stage and unless the railways act quickly it will soon be impossible to handle all the traffic efficiently.

To cope with the traffic over the Van Dyksdrif line, 536 trains were operated in each direction over this branch during October last; it was even necessary to run a full service on Sundays.

The work, estimated to cost £278,000, includes doubling between Oogies and Saaiwater and additional train-working facilities at Saaiwater.

MADAGASCAR

Temporary Railway Ferry and Bridge

In March, 1949, the bridge carrying the metre-gauge line from Antananarivo to Tamatave, over the River Rianila at Brickaville, was destroyed by a whirlwind. It consisted of twelve steel truss spans 36½ metres long, supported by steel trestles on pile foundations. The importance of the traffic required transhipment facilities at once for passengers and light freight, the speedy restoration of cross-river facilities for whole wagon loads, and the provision of, at least, a temporary bridge before the flood season of 1950.

To create transhipment facilities, it was necessary rapidly to construct landing piers and, on the left bank, railway sidings. On the right bank, sidings normally used for the transhipment of sugar cane were available for the purpose.

The civil engineering works were carried out by the railway administration in collaboration with military engineers. As they were hampered by unusually heavy rains, which made major earth moving works almost impossible, it was necessary to revise the original plans, and to make do with a smaller group of sidings on the downstream side of the bridge where a pier was built on wooden piles.

One of the difficulties was the great fluctuation in the river level which meant that the wagons had to overcome a gradient of 1 in 14 at times; cable winches were installed for this purpose. As soon as a ferryboat was available, the earth-moving equipment was moved across, and adjustments were made in the rolling stock allocations to each part of the bisected railway system. A second ferryboat replacing the inadequate first boat was eventually able to deal with over 500 tons a day.

The need to build the new temporary bridge before the flood season ruled out a masonry or concrete structure. Bailey-type road bridges were not regarded as suitable for railway purposes. It was therefore decided to use as many of the steel spans of the old bridge as could be salvaged, and to re-erect them, after repair, on a new alignment further upstream where the river is narrower.

A speed restriction is required, but this will be eliminated as soon as a diversion can be carried out. The mid-river piers of the new, temporary bridge consist of reinforced concrete piles. The bridge was opened for traffic in February, 1950.

WESTERN AUSTRALIA

Homes for Railwaymen

To provide homes for British tradesmen engaged for the permanent staff of the railways, and their families, the Department is building 50 Nissen houses on the Red Hill building estate, near Midland Junction, as part of a comprehensive plan for increasing the housing accommodation for railwaymen generally. At present 26 houses are under construction, and several are complete and already occupied.

As adapted, the house provides a comfortable home for a small family. It is 45 ft. long by 16 ft. wide and divided into two bedrooms, a spacious living room, and a well-equipped kitchen, with bathroom and laundry attached. The outside walls are constructed of heat resisting aluminium and the interior is lined with caneite insulating board.

VICTORIA

Deviation for Reservoir

The Castlemarine-Maryborough line is being diverted between Newstead and Moolort to make way for a reservoir being built by the State Rivers & Water Supply Commission. The works include the relocation of 3¼ miles of the line on higher ground half-a-mile south of the existing line, and a reinforced concrete viaduct 900 ft. long and 55 ft. high carrying the track across an arm of the reservoir.

IRELAND

Light Alloy Wagons

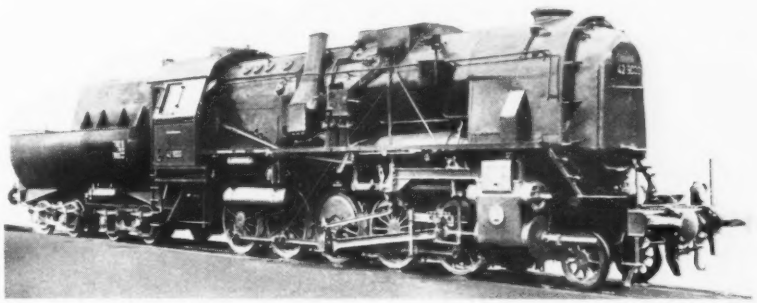
An experimental covered goods wagon of light alloys, produced at Inchicore Works, C.I.E., in conjunction with Imperial Chemical Industries, Limited, now has been in service for three months and proved most satisfactory in operation. Construction of the other nine outstanding on the order is now to be proceeded with.

The wagons, which weigh 5 tons 15 cwt., compared with a standard 7-ton wagon, are built of aluminium alloy extrusions; pressed corrugated sections are used instead of end pillars.

WESTERN GERMANY

Franco-Crosti Experiment

The Federal Railways have fitted two Class "52" locomotives with Franco-Crosti boilers. The weight in working order of the engine has been increased by 10·8 tons, from 82·65 to 93·5 tons. The engines are undergoing experimental test runs under the supervision of the Minden Locomotive Test Department of the Federal Railways.



Class "52" 2-10-0 locomotive, German Federal Railways, fitted with Franco-Crosti boiler

The "Festival" Train of the Ulster Transport Authority

First class compartment

One of the third class compartments

The "Festival" Train of the Ulster Transport Authority

New rolling stock for Belfast-Londonderry service and first to be completely built at rail-road works

THE Ulster Transport Authority marked the opening of the Festival of Britain by bringing into service on May 3 a train composed of rolling stock recently completed at its Belfast works.

The train, which has taken over the workings of the 8.30 a.m. from Belfast to Londonderry and the 5.25 p.m. from Londonderry to Belfast, is called the "Festival." The name and the symbolic badges of the Festival of Britain are prominently displayed on the roof of each coach, in front of the engine, and at the rear of the train.

The construction of the coaches was carried out in the Ulster Transport Authority road-rail engineering workshops at Duncrue Street, Belfast, which were described in our February 10, 1950, issue, and they were the first to be completely constructed there.

Some features embodied in the new stock are adapted from those already used in the manufacture of road vehicles—an example of integration on the technical side. The coachwork is 57 ft. long over headstocks, and 9 ft. 5¼ in. wide. Underframes and bogies are of all-welded construction and built of rolled steel sections.

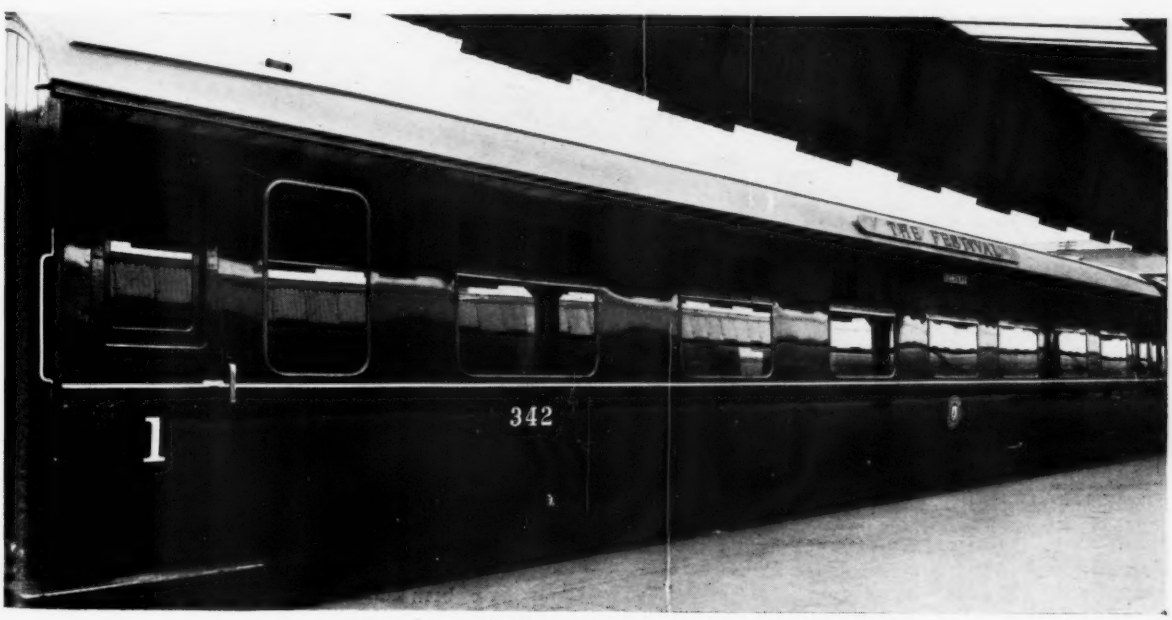
Bodywork is of composite construction, with first-class teak mainly used. The main departure from railway practice is the use of sheet aluminium for the outside panelling. A notable feature in the construction of windows is that the glass is seated in self-sealing rubber. Plastic sheets of the latest type have been used in the interior panelling, and care has been taken to avoid the use of inflammable substances in the interior decoration of the coaches.

The first-class compartments are upholstered in rich moquette with a prevailing shade of fawn. Loose spring-filled cushions are used, and the armrests and headrests are rubber filled. The windows are fitted with curtains of choice material. Second and third class compartments are upholstered in green and fawn moquette. The seats are spring filled and armrests are provided in both classes. Lavatories, at both ends of the coaches, are roomy and tastefully finished with bright plastic panelling.

In addition to the attractive circular roof lights, individual shoulder lights are fitted in all compartments. Heating is provided by gilled heaters beneath the seats, and panel heaters along the corridors. Roof ventilation is by airvacs in place of the usual torpedo ventilators, and double sliding extractor ventilators are fitted above the windows.

The complete train is made up of ten coaches: two brake corridor thirds, each with 36 seats; two corridor thirds, each with 42 seats; one corridor composite

(*Continued on page* 585)



New composite coach with 18 *first class and* 24 *third class seats*

Tests of the New "Britannia" Class Pacifics

On a test run No. 70009 maintained an average speed of 71·6 m.p.h. for 57·4 miles with a 470-ton train, touching 85 m.p.h.

ON Friday last, May 18, a special run was made from Euston to Rugby and back with a locomotive of the new standard Class "7" ("Britannia") Pacific type, at which representatives of the technical press were present. The engine was No. 70009, *Alfred the Great*, and for the accommodation of the party a special portion of three coaches, including dynamometer car and restaurant car, was attached the 10.30 a.m. down Liverpool express, bringing the load up to 15 vehicles of 488 tons tare and 515 tons gross. Arrangements were made to stop the express specially at Rugby for the three coaches to be detached.

Euston-Liverpool express at Berkhamsted hauled by locomotive No. 70009

Photo] [*M. W. Earley*

The Down Run

On the down journey considerable delays were experienced from repairs to track in progress at a number of points, and these far more than accounted for a loss of 4 min. on the 95 min. schedule, but notable work was done by the locomotive wherever unrestricted running was possible. From a 20 m.p.h. slack beyond Willesden, there was a gradual acceleration to 54 m.p.h. up the continuous 1 in 339 to Carpenders Park, and the maximum speed of 64½ m.p.h. attained on the level at Watford was continued without intermission up the whole of the succeeding 1 in 335 to Tring. The booked pass-to-pass time of 17 min. for the 14·3 miles from Watford to Tring thus was cut to 13 min. 25 sec. The engine here was being worked with full regulator and 29 per cent. cut-off, and was putting out about 1,350 h.p. at the drawbar.

Another exceptional power output followed a slowing to 20 m.p.h. for track repairs at Weedon. On 32 per cent. cut-off and full regulator the engine accelerated up 3 miles at 1 in 350, and 1½ miles at 1 in 415 to 50 m.p.h. at Welton, and further to 55 on entering Kilsby Tunnel. The highest speed reached in this direction was 74 m.p.h., near Cheddington, but after that the speed was eased for track reasons. A convincing demonstration of speed capacity was given on the return journey, however, and is described later in this article.

On arriving at Rugby, the special portion of the train was worked across into the sidings adjacent to the British Railways locomotive testing station, where another engine of the same class, No. 70005, *John Milton*, was mounted on the rollers so that the party might see a test in progress. In welcoming the party, Mr. R. A. Riddles, Member of the Railway Executive for Mechanical & Electrical Engineering, stressed the fact that in the Rugby Testing Station, and in the mobile testing units now in constant use, British Railways had the most complete and up-to-date testing facilities of any railway in the world, and that these were now being put to full use. The tests at Rugby until now have been directed towards ascertaining the most economical rate of working for complete locomotives, to making modifications to existing locomotive types to obtain more efficient working, and to obtaining information of value in the training of footplate staff, with coal saving always as the ultimate objective.

A considerable amount of information already obtained in tests at Rugby and on the road has been applied to the design of the "70000" Pacific and the new 4-6-0 mixed-traffic classes; this applies in particular to lead in connection with valve events, and to blast-pipe and chimney proportions, and in the latter connection has resulted in the "70000" class engines being fitted with single instead of double blast-pipes and chimneys.

As regards road tests, Mr. Riddles mentioned some encouraging trials which had been made with No. 70000, of which the most notable was one on January 12, from Crewe to Carlisle and back, within a fortnight of the completion of the engine. With a tare load of 443 tons, the 31·4 miles from Carnforth (a little above sea level) to Shap Summit (915 ft. altitude) were run in 35 min., out of which the 5·5 miles from Tebay to the summit occupied 7 min. 5 sec. For the final 3¾ miles of the climb, entirely at 1 in 75, the drawbar horsepower averaged 1,548 at an average speed of 45 m.p.h., and the minimum speed was 36 m.p.h.

On the round trip of 282 miles the average coal consumption was no more

than 38·3 lb. per mile, or 3·1 lb. per drawbar h.p.-hr., and water consumption was 24·1 lb. per d.b.h.p.-hr. Mr. Riddles then quoted a recent article in our associated monthly *The Railway Magazine* in which the author, describing a run with No. 70000 from Norwich to Ipswich, remarked: "After Forncett, *Britannia* was given her head, and subsequent up gradients might not have been there for any notice the engine took of them." "That is the kind of motive power we like to have," Mr. Riddles added, "and it is the object of the kind of test being carried out today to ensure that such performances can be attained with the lowest possible consumption of coal." Mr. D. R. Carling, the Superintending Engineer of the Testing Station, then explained the trials of No. 70005.

Tests at Rugby

The test was in two parts, both requiring a firing rate of 2,520 lb. of coal per hr., and both designed to give a continuous boiler evaporation rate of 20,000 lb. of steam per hr. During the first half, to simulate the climbing of a gradient of 1 in 90 with a 500-ton train at a steady 25 m.p.h., the cut-off was maintained at 40 per cent. with full regulator, and this produced a horsepower of 1,240 at the driving wheel rims. During the second part of the test, the cut-off was brought back to 22½ per cent., which is the minimum at which these engines will normally be worked, and the braking was reduced to permit the speed of rotation to be increased to the equivalent of 75 m.p.h. on level track, also with a 500-ton train.

Actually, the recorded speed rose to 76 m.p.h., during which the horsepower developed at the wheel rims increased to 1,550. At this speed the boiler pressure remained with perfect steadiness at 230 lb. per sq. in., and the steam-chest pressure of 225 lb., showing a loss of no more than 5 lb. between boiler and cylinders, testified to the excellence of design of the steam passages. It may be added that the maximum evaporation rate recorded to date with an engine of this type has been 33,000 lb. of steam per hr., with a maximum horsepower at the wheel rims of 2,100 at an equivalent speed of 40 m.p.h.; this required a cut-off of 45 per cent. It is intended, not merely to test locomotives in new condition and with best quality coal, but also in run-down condition and with low-grade coal, so that data may be obtained for every possible condition of normal working with locomotives of each class.

The Return Run

For the return journey to Euston the special portion of three coaches, with No. 70009, *Alfred the Great*, was attached to the front of the 1.55 p.m. express from Wolverhampton to Euston, bringing the total weight of the train up to 441 tons tare and 470 tons gross (14 vehicles). The train arrived late, and with the extra time taken for attaching, started 9 min. late, but this was fortunate as it ensured a clear road for a remarkable feat of time recovery, of which the times and speeds are set out in the accompanying table. The engine was not pressed on the initial rise of 1 in 370 to Kilsby Tunnel, on which

L.M.R. RUGBY-EUSTON

Engine: Class "7" 4-6-2 No. 70009 *Alfred the Great*
Load: 14, 441 tons tare, 470 tons gross

Dist.		Sched.	Actual	Speeds
miles		min.	min.sec.	m.p.h.
0·0	RUGBY	0	0 00	—
2·3	*Hillmorton ... ...*	—	6 01	37½
4·6	*Kilsby Tunnel N. End*	—	9 06	45
7·3	Welton	—	12 37	71½
			p.w.s.	*20
12·9	Weedon	—	18 15	—
19·8	BLISWORTH ...	23	27 10	64½
22·7	ROADE	26	30 04	60
27·8	Castlethorpe	—	34 19	80½
30·2	Wolverton	—	36 06	77½ 69
35·9	BLETCHLEY	39	40 58	71½
42·4	Leighton Buzzard ...	—	46 36	69 71½
46·5	Cheddington	—	50 09	68
50·9	TRING	56	54 21	62½
54·6	Berkhamsted ...	—	57 41	71½
58·1	Hemel Hempsted ...	—	60 24	80½
61·7	Kings Langley ...	—	63 02	85
65·2	WATFORD	69	65 36	82
66·7	Bushey	—	66 42	76½
69·3	Hatch End	—	68 46	77½
71·2	Harrow	—	70 12	80½
74·5	Wembley	—	72 56	*70
77·2	WILLESDEN JC. ...	†80	75 14	*60
81·5	*Camden No. 1 ...*	—	79 48	—
—	*Signal stop ... ...*	—	81 24	—
—		—	84 22	—
82·6	EUSTON	†94	87 14	—
82·6	Net time (min.) ...	†94	78½	—

* Speed restriction
† Including 5 min. recovery margin (Willesden-Euston)

the attained speed did not exceed 45 m.p.h., and a maximum speed of 71½ m.p.h. below Welton was cut short by a 20 m.p.h. slowing for permanent work at Weedon. It was not until after Roade that the real potentialities of the new class were seen.

Speed rose to 80½ m.p.h. at Castlethorpe, and from there for 17 miles on to Sears Crossing, near Cheddington, at no point fell below 69 m.p.h., on the level or on slightly adverse gradients. Full regulator and 30 per cent. cut-off were in use as far as Cheddington, but the engine was now beginning to feel the effects of some dirty coal in the lower part of the coal space, with the result that pressure was down to 220 lb. at Bletchley, 200 lb. at Cheddington, and 190 lb. at Tring. To compensate for this loss, cut-off was advanced to 35 per cent. for the 6 miles at 1 in 333 up to Tring, which were surmounted at a minimum speed of 62½ m.p.h. During most of the climb the continuous d.b.h.p. output had been from 1,250 to 1,300.

For the descent from Tring, cut-off was brought back to 25 per cent. and the regulator handle to about the mid-position (main port about ¼ open). With this working, despite the low pressure, the acceleration was very rapid, and Watford Tunnel was entered at 85 m.p.h.; over the 16·6 miles from Berkhamsted to Harrow, indeed, speed averaged all but 80 m.p.h. for the whole distance. The 57·4 miles from Blisworth to Willesden were run in 48 min. 4 sec. —71·6 m.p.h. average and a gain of 9 min. on schedule—and it was noteworthy that this time was 2 min. less than the fastest "XL" bookings before the war, and even 1 min. less than that of the "Coronation Scot" streamliner, which was restricted in weight to 300 tare tons and worked by one of the larger Class "8" Pacifics.

So *Alfred the Great* passed Camden No. 1 Box, 81·5 miles, in 79 min. 48 sec. (75¾ min. net) from the Rugby start, and would have come to rest in Euston in about 82½ min. (78½ min. net) but for an unfortunate signal stop of 3 min. on Camden bank, which made the total time 87 min. 14 sec. Even this was a gain of 6¾ min. on schedule. Such a performance augurs well for the success of the new standard class in day-to-day service.

BRITISH STANDARD FOR TOLERANCES FOR STEEL DROP FORGINGS.—A new British Standard (B.S. 1718:1951) has been prepared at the request of the National Association of Drop Forgers & Stampers based on tables submitted by that Association. These agreed tables had been previously issued by the Association and are used by its members. Tolerances are given in tabular form and are designed to cover the general range of forgings of average form in all ordinary specifications. Drop forgings are dealt with under thickness, width and length, draft angles, fillet and male edge radii, and quantity. Horizontally upset forgings are dealt with under thickness, die wear and shrinkage, eccentricity and off-set length bar portion, and quantity. Copies may be obtained from the British Standards Institution, 24, Victoria Street, S.W.1, price 2s. 6d.

The "Festival" Train of the Ulster Transport Authority

(*Concluded from page* 583)

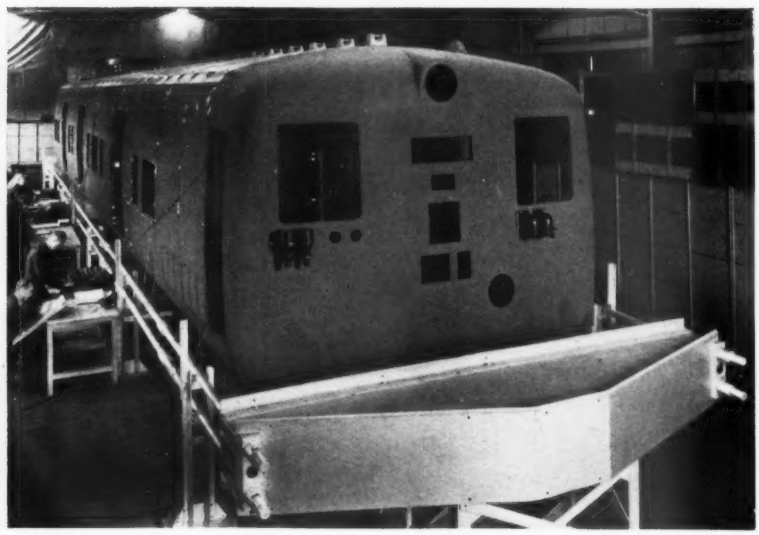
with 18 first class and 24 second class seats; one vestibule third with 56 seats; one corridor composite with 18 first class and 24 third class seats, and a restaurant car (already described in our June 9, 1950, issue). The total seats are: first class 36, second class 24, and third class 236. The vestibule third is supplied with portable tables which can be fitted up quickly when additional accommodation is required for the service of meals. The restaurant car consists of a dining saloon, a kitchen with pantry adjoining, and a snack bar.

The following firms, as sub-contractors, supplied materials and fittings:—

Sliding door gear	Beckett, Laycock & Watkinson Limited
Armrest and headrest fillings	Dunlop Rubber Co. Ltd.
Roof ventilators	Greenwoods & Airvac Ventilating Co. Ltd.
Ornamental perforated grilles	G. A. Harvey & Co. (London) Ltd.
Aluminium panels... ...	British Aluminium Co. Ltd.
Lighting equipment ...	J. Stone & Co. Ltd.
Plastics	Wareite Limited
"	Thomas De la Rue & Co. Ltd.
Heaters	Westinghouse Brake & Signal Co. Ltd.
Sliding extractor ventilators	Worcester Windshields & Casements Limited
Veneered aluminium sheets	Venesta Limited
Laminated board and veneered plywood	Flexo Plywood Industries Limited
Spring seats	Lace Web Spring Co. Ltd.
Curtains	Old Bleach Furnishings Limited
Sanitary equipment ...	James Beresford & Son Ltd.
" ...	Twyfords Limited
Upholstery...	T. F. Firth & Sons Ltd.
"	Lister & Co. Ltd.
"	John Holdsworth & Co. Ltd.

British Modern Lightweight Coaches for Indian Railways—3

Vertical and horizontal loading tests conducted at the Metropolitan-Cammell Carriage & Wagon works



Driving motor coach under test. The compressive buffing load is applied to the structure by rams replacing the centre coupler shanks, and these rams are housed in the loading beams, one of which is seen in the foreground

WITH the increasing use of lightweight forms of structure and the greater effectiveness required for many members it becomes vitally important to have full information as to the behaviour of certain parts under various loading conditions. This information is required at the earliest opportunity, and as explained in the previous article, general stress and deflection characteristics for the structure can be obtained theoretically at an early stage in design. Calculations can give an overall picture, but it is impossible to take into account all factors and to obtain a complete picture of the extremely complex conditions which obtain at certain points. The need arises, therefore, to investigate fully both the accuracy of calculated values and the true values of stresses and deflections at points where it would be almost useless to attempt calculations. Such places are sudden changes of section with stress raising profiles which, while they are to be avoided in design where possible, cannot always be eliminated.

To meet this need the Metropolitan-Cammell Carriage & Wagon Co. Ltd. has designed and built a test rig capable of holding the largest coaches at present envisaged. It is designed to exert compressive loads up to 150 tons, representing a severe buffing condition, and at the same time the coach may be loaded vertically. Coaches, therefore, can be tested under simultaneous vertical and horizontal loading, simulating the passenger load condition subjected to buffing load, while stress and deflection figures are noted. Information thus gained, while giving results for the coach under test, also provides valuable information for use on future designs. The vertical "passenger loads" are applied by hand weights visible in the accompanying illustration. This form of loading is favoured because any condition can be built up to the required distribution. Some companies in America and on the Continent use pneumatic jacks on the floor of the coach which apply the load by lifting weights slung externally on beams projecting through the sides of the structure; this method is thought to be not so flexible, besides requiring more room on either side of the coach.

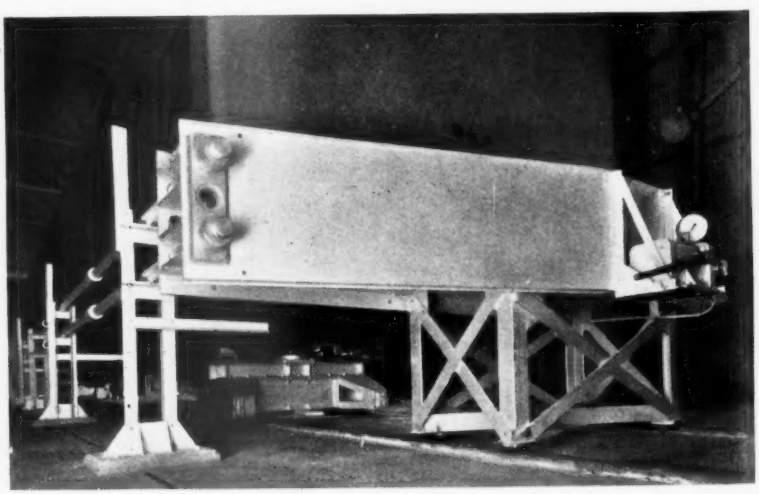
Test Rig

The test rig is completely self-contained, applying and reacting all horizontal loads within its own structure, thus obviating the need for large structures to be built into the floor.

The general layout is shown in the illustrations, from which it will be seen that the end load is applied by a 150-ton Tangye hydraulic jack fitted with a specially calibrated gauge reading direct in tons thrust, built into one of the main end loading beams. The load is then taken through the coach structure to a similar loading beam (without a jack) at the opposite end, the reaction being taken by the exterior tie bars joining the loading beams. In the case of the coach for the Bombay, Baroda & Central India Railway, and the Great Indian Peninsula Railway, at present under consideration, the load is applied by rams replacing the centre coupler shanks, thus loading direct to the buffer springs, but it requires only small alterations to adapt the rig for loading on to side buffers.

An interesting feature of the rig is its complete freedom from fixings to floor or walls, allowing the whole to move slightly under load, ensuring a final position free from extraneous bending moments.

The whole rig is mounted on steel rails set at the standard gauge of 4 ft. 8½ in., allowing the coaches for test to be shunted into the test house on service bogies and then mounted on the special



Test rig showing loading beam with hydraulic pump and jack used for applying buffing loads. Also shown is one of the bolsters used to support the coach under test

test bolsters for loading. These test bolsters and loading beams are mounted on steel sliding pads which locate on the rails.

The loading beams are fabricated from 4 in. × 4 in. × $\frac{5}{8}$ in. steel angle section with webs and diaphragms of $\frac{1}{4}$ in. mild-steel plate, formed into a box section 3 ft. 6 in. wide by 2 ft. high at the middle. The distance between tie-bar centres is 13 ft. 6 in., and the whole weight is supported on a cross-braced structure locating on the rails. The seatings for the end nuts on the tie bars are of spherical form, machined in steel blocks welded to the main structure of the beam, ensuring that the tie-bars receive only tensile loads despite small deflections of the loading beam during tests.

The tie bars are of $2\frac{1}{8}$ in. effective dia., made in lengths convenient for assembly, and joined by screwed sleeves. Light supporting structures for the tie-bars are spaced along the length of the rig; these also provide convenient mountings for dial gauges used when measuring deflections of the coach structure.

The test rig bolsters are fabricated from mild-steel sections and plates with fittings on the upper beam identical with those used on the bogie bolster in service, thus assuring that the method of support is as near as possible to service conditions. The weight of the car is taken on the centre pivot set at a height of approximately 2 ft. above the rail level, with side bearers having a clearance of $\frac{1}{16}$ in. at a radius of 2 ft. 8 in. from the centre pivot.

It will be seen from one of the accompanying illustrations that there is a number of pylons extending through the floor of the coach to roof height. These are assembled when the coach is in position, to provide supports for dial gauges reading deflections of the roof structure, and datum wires extending longitudinally along the car from which measurements of lateral movement can be taken at important parts of the structure.

Check on Weights

All photographs taken in the test house show a driving motor coach with a high tension compartment. A careful check was kept on weights during the production of this car, records being made of component weights as assembled, and the trend of the total. In this manner a constant check was provided between calculated and actual weights, enabling a true tare condition to be represented before test loadings began. The structure is shown with certain equipment in position being weighed before testing.

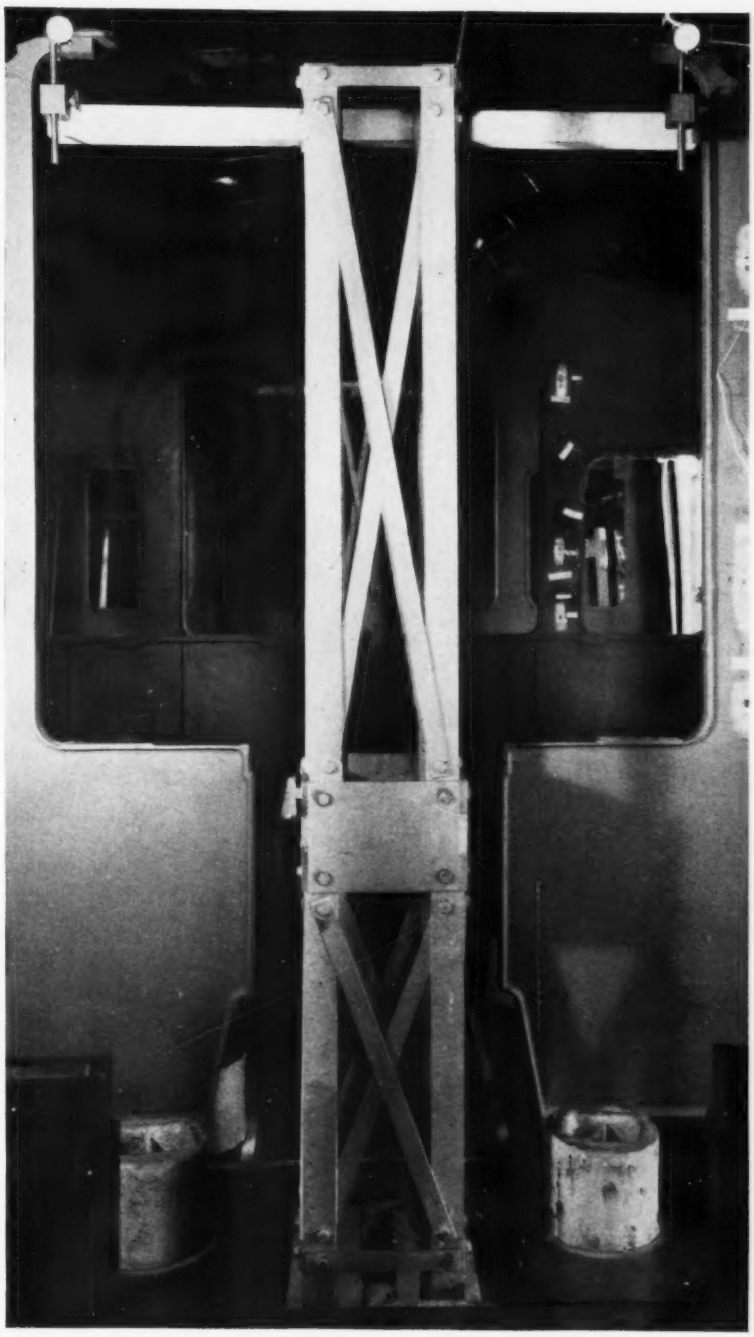
The structure tested was, so far as was practicable, composed only of the basic members used in the stress calculations, without internal furnishings and fittings. Most of the heavy equipment (such as high-tension frame, motor generator sets, and pantograph) was assembled in position on the structure; the remaining weights necessary to bring to tare condition were provided by hand weights of $\frac{1}{2}$ and 1 cwt. for concentrated loads and steel sheets for distributed loads.

The programme of tests applied to the coach covered a comprehensive range, calling for a large number of different loading conditions. To expedite the application and removal of weights, diagrams were prepared showing the numbers and positions of weights necessary for each test condition. These diagrams used in conjunction with a colour code for the weights, cut down considerably the time required to complete the tests.

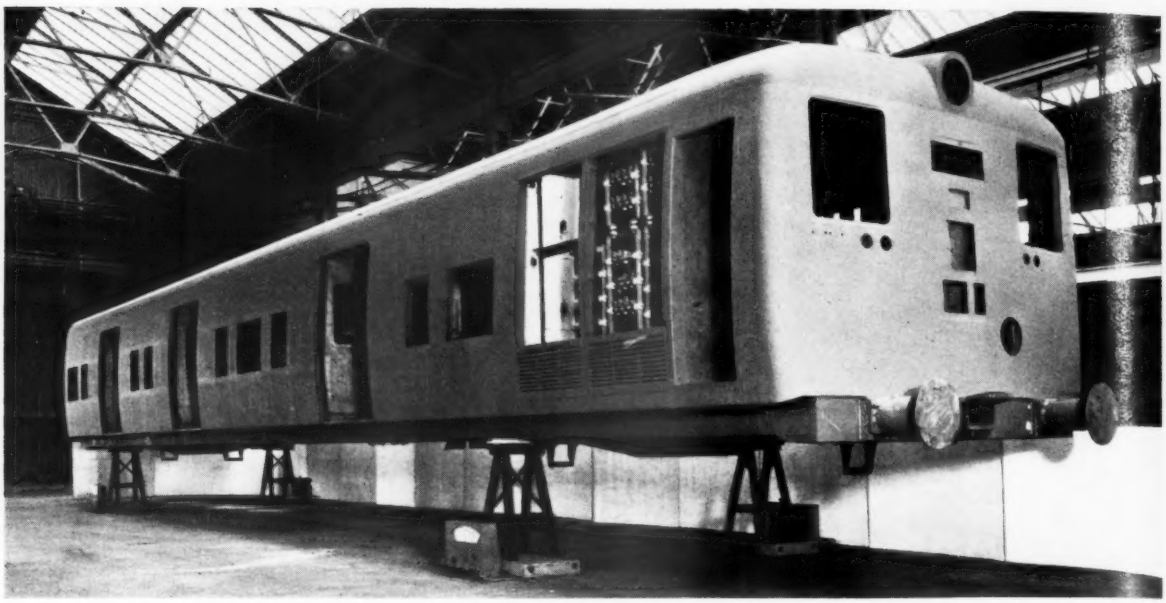
Loading Conditions

The full list of loading conditions applied to the structure is given below:—

(1) Tare condition.
(2) Seated passenger load.
(3) Crush passenger load.
(4) Dense crush passenger load.



Pylons extending through the floor structure enabling deflections of the roof members to be measured



The coach shell with certain equipment assembled, being weighed before testing

(5) Crush load with 20, 40, 60, 80 and 100 tons buffing loads.
(6) Tare condition with 100 tons buffing load.

The method of obtaining stress figures was by use of wire resistance strain gauges arranged in circuits of the Wheatstone Bridge type, which technique has become almost universally accepted as the most accurate and simple way.

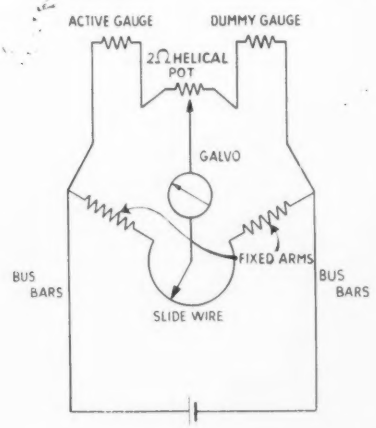
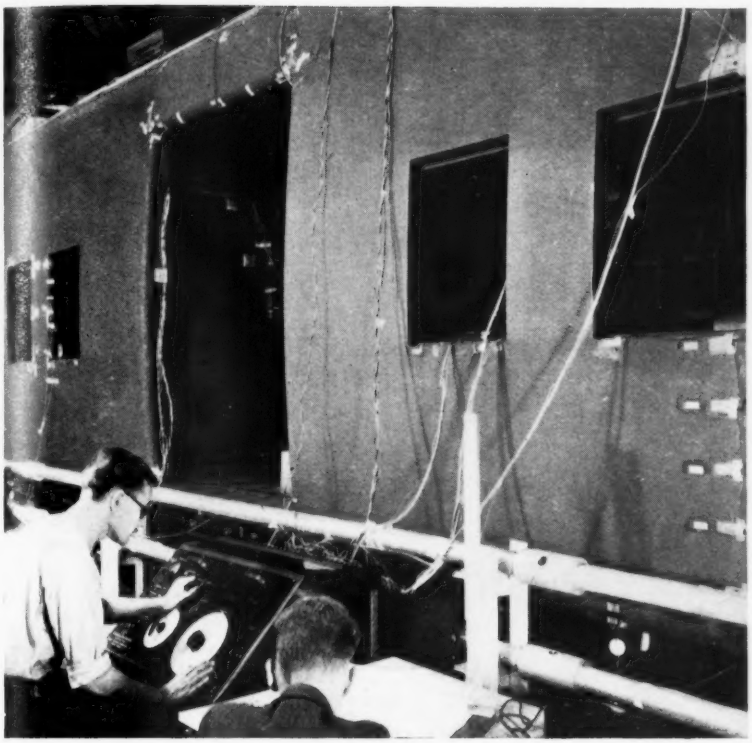


Fig. 9—Basic circuit used on strain gauge tests

The slide wire dial, calibrated in percentage change in resistance, is used to rebalance the circuit after a strain has been applied to the active gauge. It is possible to read to within ·001 per cent. change

A total number of 422 active gauges was used in the main test programme; these were wired to three recording units. The circuit used for each gauge is shown in Fig. 9 from which it will be seen that each active gauge has a corresponding dummy gauge affixed to an unstressed dummy block which balances the circuit should there be any change in temperature. The importance of keeping the interior of the test house free from draughts and large temperature changes, and selecting a site which is free from heavy vibrations cannot be over-stressed, since the equipment used is extremely sensitive and requires careful handling.

The test loads were applied by hand weights and steel sheet. The dense crush load applied in a double doorway is illustrated above



Recording resistance changes in strain gauge circuits

The gauges were positioned by reference to the stress diagrams previously calculated and by experience gained on previous tests, which had indicated points on the structure at which it was possible to read high stresses. Much trouble can be avoided if all gauge positions are ground, cleaned with emery cloth and thoroughly degreased before applying the gauges.

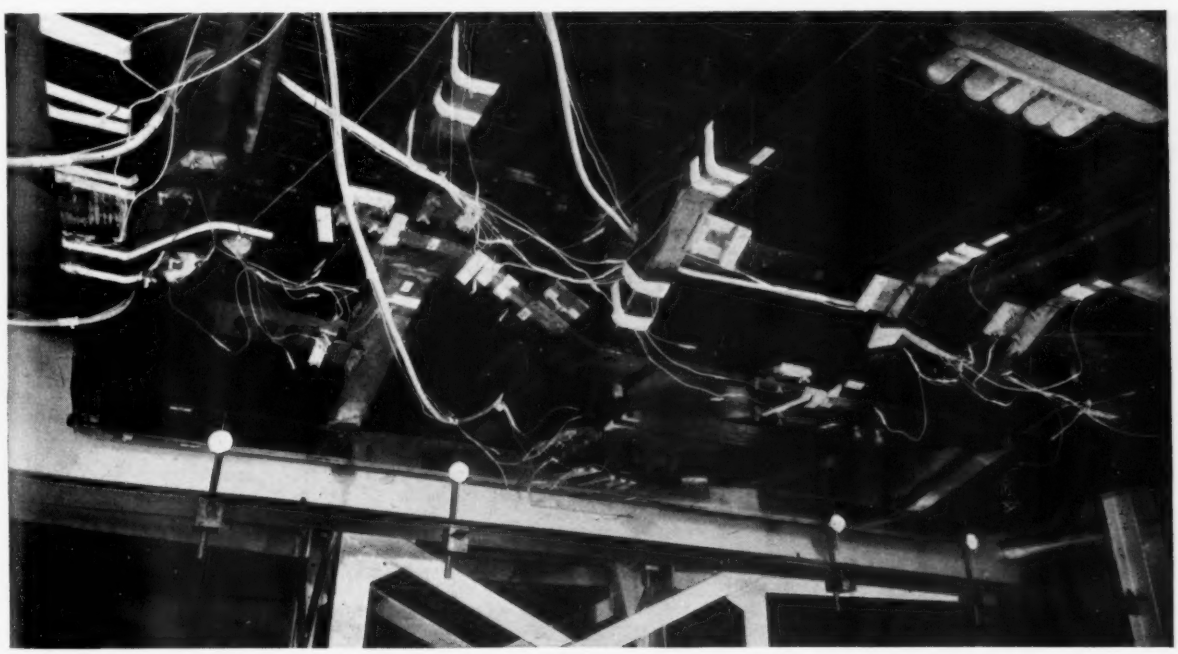
It was decided in the interests of accuracy to use a d.c. supply of electricity obtained from batteries, as the works supply is sometimes liable to surges resulting from intermittent heavy demands occasioned by such causes as arc-welding equipment.

The coach was first loaded to represent the tare condition to which all changes in stress could be related. In this condition all gauge circuits were in turn selected (by a rotary selector) and balanced by means of the potentiometer to give a zero galvanometer deflection. The galvanometer used was a very sensitive instrument of the moving coil reflecting type with a scale sensitivity of more than 150 millimetres per micro-amp. Strain-gauge readings being made during a test are illustrated.

The test loading was then applied and every circuit rebalanced, this time by the slide wire, to give a zero galvanometer reading. Having noted all the resistance changes the test load was removed and the circuits rechecked for drift which sometimes affects the original zero position during the time occupied in testing. This is known as the "null point" system and results in extremely accurate figures.

To convert the readings to stress values they have to be related to the sensitivity factor of the gauge (which depends on the resistance characteristics and length of gauge wire) and Young's Modulus of Elasticity of the material being strained. A series of tables and diagrams was then prepared indicating the gauge positions and the relevant stress values, in which form the results could be studied carefully and conclusions drawn.

Having obtained a general picture of the stress and deflection characteristics of the structure under the main tests listed previously, a further series of investigations was carried out, by concentrating gauges around points of



Strain gauges and dial gauges at extremity of floor structure

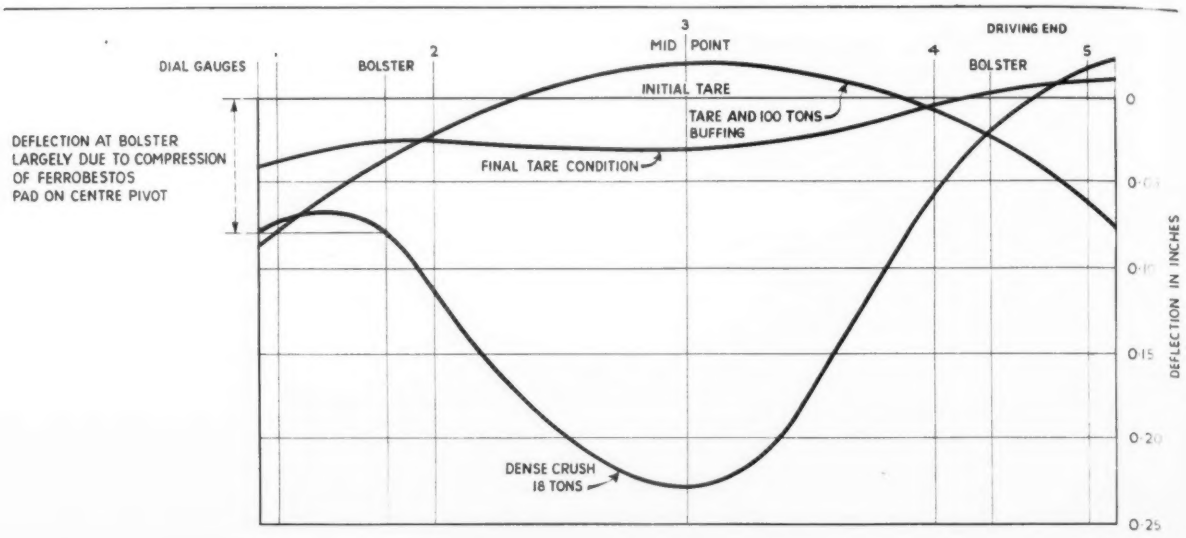
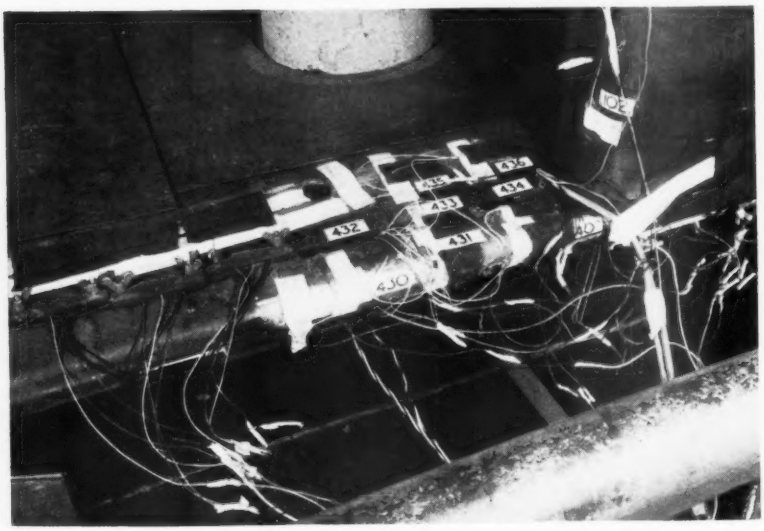


Fig. 10—(above) Deflection curves plotted from averages of solebar vertical deflections. The curves are related to a horizontal datum representing the initial tare condition before testing



Left: Detailed investigation of stresses at corner of double door

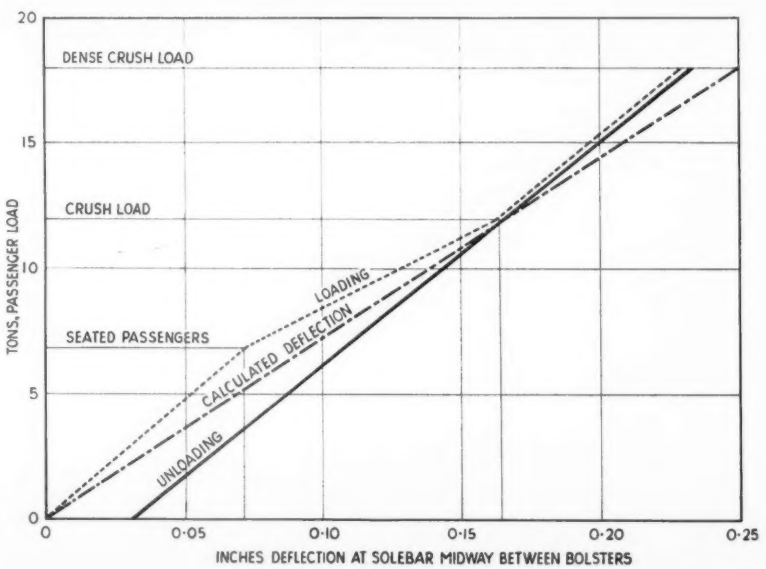
Fig. 11—(below) Deflection at solebar midway between bolsters under various vertical loads

special interest, thus ensuring that full information regarding both detailed and general stress distribution was available. Strain gauges placed adjacent to a door corner to investigate the effect on this part of a high loading condition are illustrated.

Full records were also made of the deflections at important locations on the structure. Fig. 10 illustrates the deflection form of the solebars under various loading conditions. Also of interest is the diagram shown in Fig. 11 which illustrates clearly the settling of a new car under load before the structure becomes fully effective. As will be seen, the settling on this car amounted to .03 in., which figure must be attributed to a number of extremely small movements taking place at joints in the structure.

The final results obtained were very satisfactory, indicating design to be sound and well able to cope with the loads to which it will be subjected in service.

(To be continued)



RAILWAY NEWS SECTION

PERSONAL

INSTITUTION OF CIVIL ENGINEERS

Mr. Allan S. Quartermaine has been elected to succeed Dr. W. H. Glanville in November as President of the Institution of Civil Engineers. Mr. Quartermaine is Chief Engineer, Western Region, British Railways.

Mr. O. W. Cromwell, who retired from the position of Chief Officer for Labour & Establishment, Southern Region, on April 30, entered the service of the S.E.C.R. at Redhill in August, 1901. In 1908 he was transferred to the Office of the Superintendent of the Line, and in 1911 to the Staff Section of the General Manager's Office; he was appointed Chief Staff Clerk in 1919. In March, 1924, on the amalgamation, Mr. Cromwell was appointed Chief Staff Clerk, General Manager's Office, Southern Railway, and in 1932 he was promoted to Staff Assistant to the General Manager. He became a member of the Railways Staff Conference at the same time, and was appointed Chairman of that body, also of all negotiating bodies dealing with the railway staff in 1943. From that date Mr. Cromwell represented the Railway Companies' Association on the British Employers' Confederation until nationalisation; he was also the representative of the former railway companies, and from 1948 of the Railway Executive, on the National Maritime Board, the National Association of Port Employers and the Industrial Canteen & Staff Undertakings Wages Board. Mr. Cromwell was appointed Chief Officer for Labour & Establishment in 1942.

INSTITUTE OF TRANSPORT

Mr. A. B. B. Valentine has been elected President of the Institute of Transport for 1951-52, and will assume office on October 1, on the retirement of Mr. J. S. Wills. Mr. Valentine is the Member of the London Transport Executive who is responsible for Operation & Commercial Matters.

Mr. W. A. Mather, President of the Canadian Pacific Railway, has been elected an Honorary Member of the Engineering Institute of Canada.

The office of General Manager & Secretary of the former Grand Canal Company, Ireland, having been terminated by the amalgamation of that company with Coras Iompair Eireann, the services of Mr. John H. Scott, who held that position for 12 years, have been terminated and he is accordingly relinquishing his position with the Board on June 30.

Mr. R. O. Stewart, Engineer of Bridges, Canadian National Railways, has been appointed Assistant Chief Engineer, Construction. Mr. T. H. Jenkins, Bridge Engineer, Toronto, has succeeded Mr. Stewart as Engineer of Bridges, with headquarters at Montreal.

Mr. H. C. Lang, Assistant Chief Officer for Labour & Establishment, Southern Region, who, as recorded in our May 4 issue, has been appointed Regional Staff Officer, Southern Region, joined the L.S.W.R. at Surbiton in 1915 and after departmental training entered the General Manager's Office as a junior clerk in 1918. Following employment in all sections of that office he went over to staff work in 1928, on which he has since remained. As a member of the Supplementary Reserve, Mr. Lang served for a brief period at the outbreak of the last war in the Royal Engineers, and was acting as Chief Instructor, Movement Control, at Castle Donington in August, 1940, when he was released to return to railway employment. He was appointed Assistant Chief Officer for Labour & Establishment, Southern Region, on January 1, 1948.

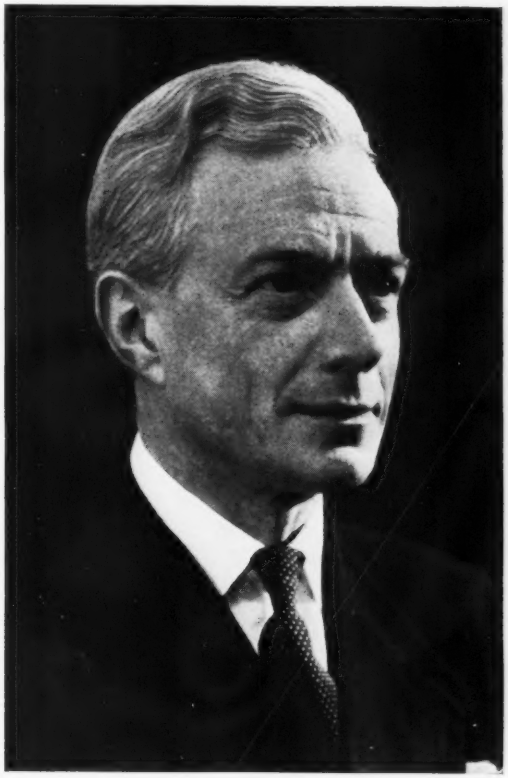
Mr. A. Dalton, General Manager, East African Railways & Harbours, is at present on leave in Great Britain.

British Railways has announced that Mr. S. J. C. Chapman, Works Accountant, Cowlairs, Scottish Region, has been appointed to be Assistant to Accountant, Eastern and North Eastern Regions, Kings Cross.

Mr. W. C. Handley has been elected to the board of British Insulated Callender's Cables Limited, as an Executive Director.

Mr. O. W. Cromwell

Chief Officer for Labour & Establishment, Southern Railway and Southern Region, 1942-51



Mr. H. C. Lang

Appointed Regional Staff Officer, Southern Region

Mr. Nelay Katzenelson
Appointed Chief of Way & Works Department, General Urquiza Railway, Argentina

Mr. E. J. Cotorruelo
Appointed Chief of Traffic Department, General Urquiza Railway, Argentina

Mr. Adolfo Kirkerup
Appointed Chief of Traffic Department, General Belgrano Railway, Argentina

Mr. Nelay Katzenelson, Assistant Chief of Way & Works Department, General Urquiza Railway, Argentina, who, as recorded in our April 20 issue, has been appointed Chief of Way & Works Department, obtained his degree as civil and hydraulic engineer at the University of La Plata in 1942. In the same year he entered the Way & Works Department of the Entre Ríos and Argentine North Eastern Railways, becoming Assistant Chief of the Technical Office in 1943, and Chief of that Office two years later. Mr. Katzenelson was appointed Assistant Chief of Way & Works Department, General Urquiza Railway, on January 1, 1949.

Mr. E. J. Cotorruelo, Secretary, Operating Section of the Management, General Urquiza Railway, Argentina, who, as recorded in our April 20 issue, has been appointed Chief of the Traffic Department, was born in Concepción del Uruguay in 1905 and joined the Entre Ríos Railways at the age of 16. Until 1929 he was employed as telegraphist and clerk at different stations, and afterwards became a relief Stationmaster. Following further service in the Claims, Movement, Train Control, and Traffic Inspector's Offices, he was appointed Stationmaster in 1938 and on the transfer of the railways to national ownership became Secretary of the Operating Section of the Management.

Mr. Adolfo Kirkerup, who as recorded in our April 20 issue, has been appointed Chief of the Traffic Department of the General Belgrano Railway, Argentina, took his degree as Civil Engineer at the University of Buenos Aires in 1942, and the following year joined the Argentine State Railways as Assistant Construction Engineer on the Superí-La Cocha branch. Mr. Kirkerup subsequently was employed on the construction of the Pedro Vargas-Malargüe line (now part of the General San Martín Railway) and afterwards as Construction Engineer of the Ing. Jacobacci-Esquel line (now part of the General Roca Railway), and afterwards became, successively, Divisional Traction Superintendent in Córdoba and District Engineer at Salta. At present he holds the position of Technical Secretary of the General Roca Railway in addition to that of Chief of the Traffic Department, General Belgrano Railway.

Mr. W. Dunsmuir, M.I.Loco.E., District Motive Power Superintendent, Glasgow (North), who, as recorded in our May 18 issue, has been appointed Assistant Motive Power Superintendent, Scottish Region, joined the Caledonian Railway at Polmadie in 1907, receiving his technical training there and at St. Rollox Works and the Glasgow Technical College. In 1929 he was appointed Head Office Inspector (Motive

Mr. W. Dunsmuir
Appointed Assistant Motive Power Superintendent, Scottish Region

Mr. John Cowing
Appointed Assistant to Commercial Superintendent (Freight Rates & Charges), London Midland Region

Mr. R. L. Ireland
Appointed Publicity Assistant, Scottish Region

Power), Northern Division, L.M.S.R., Glasgow, and in 1933 he went to Carlisle (Kingmoor) as Foreman Fitter. While at Carlisle Mr. Dunsmuir acted for a period as Assistant to the District Motive Power Superintendent, Durranhill. In 1939 he moved to Aberdeen as District Locomotive Foreman and in the following year was appointed District Locomotive Superintendent, Inverness, also in charge of the Chief Mechanical Engineers, Carriage & Wagon and Road Motor Departments for the Inverness Area. Mr. Dunsmuir was appointed District Locomotive Superintendent, Perth, in 1943, and two years later became Assistant (Motive Power Maintenance) to Operating Manager, Glasgow. On nationalisation he was made Assistant (Maintenance) to Motive Power Superintendent, Scottish Region. In 1949 he became District Motive Power Superintendent, Burntisland, and a year later was appointed District Motive Power Superintendent, Glasgow (North).

Mr. John Cowing, Assistant Commercial Superintendent (Rates & Charges—Goods), South Woodford, Eastern Region, who, as recorded in our April 13 issue, has been appointed Assistant to the Commercial Superintendent (Freight Rates & Charges), Euston, London Midland Region, entered the service of the North Eastern Railway at Consett in 1915 as a junior clerk. For nine years he served at various stations in the Newcastle district, except for a period during the 1914-1918 war when he joined the R.F.C. (later R.A.F.) and became a seaplane pilot, seeing service in France and home waters. In 1924 Mr. Cowing was selected for work at the York Headquarters in connection with the revision of rates arising out of the Railways Act, 1921, and in 1928 he entered the Rates Office of the Goods Manager at York and held several posts there. He left the North Eastern Area in 1937 on promotion to a senior position in the Rates & Charges Section of the Goods Manager's Office, Southern Area, L.N.E.R., Kings Cross, and progressed through this office, occupying several posts including those of Deputy Chief Assistant and Chief Assistant. In March, 1948, Mr. Cowing was appointed Assistant Commercial Superintendent (Rates & Charges—Goods), Eastern Region.

Mr. R. L. Ireland, Chief Clerk (Staff & Administration), Public Relations & Publicity Department, Scottish Region, who, as recorded in our May 4 issue, has been appointed Publicity Assistant in that Department, began his railway career in the Office of the Chief Goods Manager, Caledonian Railway, Glasgow, in 1916. Following service at stations in the West of Scotland, he was appointed to the Goods Manager's Office, L.M.S.R., Glasgow, in 1925. In 1937, he became personal clerk to the Commercial Manager and two years later was appointed personal clerk to the Chief Officer for Scotland. Mr. Ireland served in various sections of the Commercial Manager's Office, Glasgow, from 1940 until being appointed Senior Clerk in the Advertising & Publicity section of that Office. On nationalisation, he was transferred to the staff of the Advertising Officer, Scottish Region, and at the formation of the Public Relations & Publicity Department, in the Spring of 1949, became Chief Clerk (Staff & Administration).

Mr. G. E. Beharrell, Managing Director, Dunlop Rubber Co. Ltd. has been elected President of the Society of Motor Manufacturers & Traders.

Mr. A. T. Salmon, Production Assistant to the Publicity Officer, Railway Executive, has been appointed Publicity Assistant to the Public Relations & Publicity Officer, Eastern Region.

Mr. T. W. Stanier has been appointed General Sales Manager to Marshall Sons & Co Ltd., and John Fowler & Co. (Leeds) Ltd. Formerly he was Export Sales Manager of Aveling Barford Limited.

Mr. C. T. Goodchild has been appointed an Officer of the London Transport Executive with the title of Works Superintendent (Aldenham). He will report to the Works Manager (Buses & Coaches) and be responsible for the general control of Aldenham overhaul works.

Mr. J. W. Butterworth, an engineer in the Victorian Railways Rolling Stock Branch, who has recently been on a visit to Great Britain to study railway carriage design and construction methods, has now returned to Victoria.

The late Mr. M. B. Dewar, who was a Vice-President of the Federation of British Industries and Chairman of British Timken Limited, and had been Managing Director of the Metropolitan Carriage Wagon & Finance Co. Ltd., from 1922 to 1927, left (duty paid £293,766), £464,410.

The Minister of Transport has approved the appointment of Mr. J. Newton to be a member of the Transport Users Consultative Committee for the North Western Area. Mr. Newton is an Area Organiser, British Iron, Steel & Kindred Trades Association.

Mr. Harold R. Worth has been appointed Assistant to the General Superintendent of the Quebec District, Canadian Pacific Railways. He had previously been at Toronto as Supervisor of Transportation for the Ontario District.

Mr. Edward Hirst has resigned his position as Vice-Chairman & Joint Managing Director of the British General Electric Co. Pty. Ltd. (the Australian associated company of the General Electric Co. Ltd. of England), due to ill health, but will remain a member of the board. Sir Harry Brown will continue as full-time Chairman of the board and Messrs. W. R. Caithness and T. E. Morgan have been appointed Joint Managing Directors.

We regret to record the death on May 18, at the age of 86, of the Rt. Hon. Thomas Wiles, Chairman of the Port of London Authority from 1941 to 1946.

Mr. Douglas Sharp has been appointed Chairman, and Mr. H. M. M. Hyslop, Managing Director, of the Scottish Machine Tool Corporation Ltd.

Dr. C. F. Bareford, Head of the Mullard Electronic Research Laboratory, has been made a Director of Mullard Equipment Limited.

Mr. H. L. Walker has been re-appointed Area Chairman for the Northern Area of the Road Haulage Association during the ensuing year. The Vice-Chairmen are Messrs. R. Clifford, H. Lincoln and E. H. Patterson. Mr. W. Morton has been appointed to succeed Mr. L. W. Thurman as East Midland Area Secretary of the Association.

London Transport Appointments

The London Transport Executive announces that the following changes in organisation have been made in the Office of the Electrical Engineer:—

Mr. H. Branton, previously Generating Station Superintendent (Neasden), to be Generating Station Superintendent (Lots Road).

Mr. W. Ward, Assistant Generating Station Superintendent (Lots Road), to be Generating Station Superintendent (Neasden).

Mr. D. S. Ryall, Assistant Distribution Engineer (Trams & Trolleybuses) Northern Division, to be Substations Engineer.

Mr. G. H. Long, Assistant Distribution Engineer (Trams & Trolleybuses) Southern Division, to be Electrical Equipment Engineer in charge of Northern and Southern Electrical Divisions (Trams & Trolleybuses).

Mr. John Elliot's Visit to the United States

Mr. John Elliot, Chairman of the Railway Executive (centre), conferring with Mr. M. W. Clement, Chairman of the Board, Pennsylvania Railroad (left), and Mr. W. S. Franklin, President, Pennsylvania Railroad, at Mr. Franklin's office in Philadelphia

Lord Hurcomb on Present Transport Problems

Effects of delay in adjustment of increased charges: recent difficulties in working South Wales freight traffic

Lord Hurcomb, Chairman of the British Transport Commission, visited South Wales last Monday to inspect railway, docks, and road transport installations in the Swansea area. During his visit, Lord Hurcomb was the principal guest at a luncheon at the Swansea Guildhall, presided over by the Mayor of Swansea, Alderman D. Jones, who is a freight train inspector on British Railways.

Lord Hurcomb, speaking at the luncheon, said that the B.T.C. was sympathetically aware of the sense of civic duty which promoted members of the railway staffs to serve on local councils. Though the Railway Executive had recently found it necessary to standardise its rules for allowing leave to those who wished to attend council meetings and committees in working hours it was far from the case that there was any desire to discourage railwaymen from taking part in local government to which they had contributed so much.

The interests of the B.T.C. in Swansea were widespread and valuable and Swansea Docks played an important part. Trade in that port last year reached a record tonnage and new industries were still being established through extensive developments which they were most anxious to foster.

Their railway interests in South Wales held an equally important place. They might sometimes hear it said that nationalisation had made no root-and-branch change in organisation and had even left a hard core of resistance to necessary adaptations to a new policy. On the other hand they might have heard it loosely said that everything would be "lovely" if there had been no change at all.

They would agree he thought that it was an advantage to the commercial community that most of the experienced railway officers in South Wales were still at their service doing roughly the same jobs as before. They expected from them all their old sensitiveness to local needs and a full application of the modern spirit of staff consultation which they wanted to prevail throughout the organisation.

This was not an occasion for enlarging on the benefits of unification, but they were real, progressive, and, though three years was too short a time for full results to show, would increasingly lead to greater technical efficiency and to financial economy.

Delays in Transit

Delays in transit were occurring in the Swansea area, and such troubles were bound to occur on any railway system which involved a great many transfer points, when the normal flow of traffic was dislocated. They were not in such circumstances the result of faulty management or the outcome of bringing the four former railway groups under one ownership and one Executive. Traders in South Wales had been affected by embargoes on freight traffic and they were entitled to a full explanation of the causes of the congestion and the steps taken to deal with it.

The first general underlying cause of recent difficulties in working freight traffic was the great increase in the total volume of work which the railways handled today. The net ton-miles of freight traffic handled in 1950 was one third higher than in 1938. This large additional load had in many cases not followed the pattern of movement for which the railways were laid out in the first place. Indeed, the flow of coal class traffic from South Wales to inland destinations this winter had risen by about 45 per cent. as compared with a year ago, resulting from the present arrangements for distributing fuel and the importation of coal from America.

Also, there had been an increase in iron and steel traffic from South Wales and Monmouthshire as a result of high outputs, and, though this represented a flow of traffic for which the railways especially desired to cater, the additional tonnage and the wagons required had added temporarily to difficulties arising from other causes.

A third underlying cause of the present congestion in freight traffic was attributed to shortage of staff. There was abnormal sickness in the earlier part of the year. They had, also, some shortage of staff in certain grades, and because of these factors it had been necessary to place temporary embargoes on certain types of traffics. While they were frequently charged with employing excessive numbers on the railways the problem at the moment certainly contradicted this idea.

Remedies

Their interest, however, would be in remedies rather than in explanations of the problem, and if these had arisen for reasons almost entirely outside the control of management it was the responsibility of British Railways to find means of clearing the bottlenecks as quickly as possible. With this object in view officers of the Western Region and of the Railway Executive had had their minds constantly on the position as it existed from day to day.

Remedial steps had included increasing the number of freight trains worked over the three main routes out of South Wales by approximately 10 per cent. as compared with a year ago.

They had made greater use of alternative routes not normally economic. They had organised the maximum amount of week-end working to the limit of the crews available. Certain passenger trains were cancelled for three weeks to provide extra margins for freight trains and the War Department depot at Didcot had been brought into use for marshalling trains which would normally be shunted in the London area. Thirty locomotives were taken out of store to provide additional motive power, and occupation of the main routes out of South Wales for repairs and maintenance had been cut down.

Resulting from these and other measures the drastic embargoes which had to be placed on the forwarding of traffic from South Wales had now been raised and acceptance of traffic from South Wales to England was subject to restrictions on only one route. Throughout the period of restriction the more important streams of traffic had been generally excepted from the embargo.

It was often alleged that the staff of British Railways had grown exorbitantly since nationalisation in 1947. After making allowance for unfilled vacancies, however, there had been a real economy in the establishment of over 40,000 employees, and if allowance was made for improved conditions of employment in the way of shorter working time and holidays their staff was actually less than before the war. Unjustified allegations of idleness and over-staffing did great injustice to the rank and file of railway workers and to the management.

Then, again, critics seemed to think that vast economies could be secured by closing branch lines. This was a process which the railways themselves applied in the past and which had been intensified during recent years. When, however, it was suggested that millions of pounds could be saved by cutting out uneconomic services, he wondered whether it was realised how many rail services would have to be withdrawn.

They would be bound to review a number of branch lines serving some of the less populated parts and they could have gone further and faster were it not for the opposition of local interests founded on understandable sentimental regard for the local line.

Many people were predisposed to see a sinister context between the nationalisation of a service and any rise in its charges. Lest it be thought that the B.T.C. was in any way privileged he would remind them that they paid taxes just like other people. This was quite right, and the B.T.C. in all its road activities was now paying to the Exchequer under the head of oil and vehicle duties no less than £20 million a year, several millions of which were due to increases imposed in the last two budgets. Increases in costs of this kind were entirely beyond their control and the same was true of the increases in cost of other supplies.

Accumulated Deficiencies

It was the interval of time between the date at which nationalised transport had had to suffer increased costs, and the date at which, through one piece of machinery or another, it had been able to secure necessary upward adjustments of its charges, that was the main explanation of accumulated deficiencies. There was, he believed, a growing recognition of this fact. If a basic industry like transport was to pay its way, and discharge its duty of providing an adequate and economic national system, its finances must be set and kept on firm ground, and it should not be left month after month to provide service below cost, and, in effect, to subsidise other industries or social services.

While the industry must also not be starved of materials essential to bring its equipment into a full state of efficiency, yet one could see everywhere proof that they had been kept on a very severe ration, which had not prevented them, however, from making improvements and undertaking new developments like those carried out in connection with the great Margam works.

They felt entitled to ask the trading and travelling public to take a realistic view of the situation and to realise that there was no mysterious and exceptional quality in transport which could enable it to pay for all the supplies and services it needed at a constantly rising level of prices and yet leave its own charges unadjusted.

They had, indeed, done much to keep expenditure down, but they could not close the gap in their budget by day-to-day and short-term economies on a scale which would meet the extra costs thrown on them.

Beyer, Peacock & Co. Ltd.

Mr. Harold Wilmot reports continued progress: increasing sales and a record order book

The annual general meeting of Beyer, Peacock & Co. Ltd., was held on May 23 in London, Mr. Harold Wilmot, C.B.E., Chairman & Managing Director, presiding.

The Secretary (Mr. L. T. Dawes) read the notice convening the meeting and the report of the auditors.

Mr. Wilmot, in his statement issued with the report and accounts for the year ended December 31, 1950, said that in reviewing the details of the balance sheet it would be seen that their fixed assets were approximately the same as last year. The excess of current assets over current liabilities had increased by over £160,000, giving a surplus at December 31, 1950, of about £640,000. It would be noted that there had been a transfer of a further sum of £125,000 to general reserve, bringing the company total to £375,000, and the consolidated total (including an increase of £50,000 in the general reserves of subsidiaries) to £600,000. The carry-forward of profit and loss balance showed a slight reduction from £48,154 to £41,591. The net profit had again advanced—the result of a considerable increase in total sales—and profit rates had not been raised.

Total employment had not been increased by any appreciable amount, and the larger turnover was occasioned by an improvement in factory efficiency *plus* a not inconsiderable amount of sub-contracting to make good in part the deficiencies in their domestic production possibilities. The directors felt that the policy they had followed in this matter was the only satisfactory answer to current shortages of manpower and supplies in their heavily taxed industry. The demand for locomotives—especially of their Beyer-Garratt type—showed no decline during the year and their total order book stood at a new record high level. It included Beyer-Garratt locomotives for West Africa, Australasia, East Africa, Rhodesia, and Brazil, and conventional types for West Australia, South America, and the Middle East.

Overseas manufacturing competitors turned their eyes to the full order books of British firms and it was to be expected that competition would become keener in certain markets. To maintain their dominating position demanded constant care. Growing shortages in the British supply position constituted a menace of increasing gravity. If, as they understood, export trade was a national asset of extreme importance, it followed that Government controls must regard the manpower, machine tools, and materials and supplies requirements of the industry as matters of high priority.

Growing Popularity of Products

The popularity of their special type of locomotive continued to grow and they had evidence from users in many parts of the world of the excellent designs and high-grade workmanship of the products of their Gorton factory. They continued to maintain a close contact with overseas railways through personal visits and they were always happy to welcome their railway friends when they visited this country. In this year of the Festival of Britain they should have more than average opportunities of seeing visitors to these shores.

Their subsidiary companies had made further progress during the year under review and were in good shape for the current programme. The continued improvement in their combined technical capacity and financial strength was of increasing importance to the parent company. Further modest expansion was contemplated for the present year. The board was of the opinion that the value of these assets far exceeded the figures by which they were represented in the balance sheet.

Their associated company, Metropolitan-Vickers-Beyer, Peacock Limited, had commenced production in its new factory and had secured orders for electric and diesel-electric locomotives sufficient to ensure full activity for some years. No profit had been taken in the accounts now submitted, but the directors had every confidence that the prospects for the future were of a nature to confirm their original opinion of this joint venture.

Again he would like to record his most sincere appreciation of the support and co-operation of all his colleagues. Buildings, machinery, and equipment could be bought and sold, and were subject to disposition in a ready manner; men and women were not of the same category. They placed the highest possible values on personal relationships.

The results he had the privilege of presenting were in part some measure of the success which had attended their efforts at team-building. He was sure that in this matter their emphasis was in the right place, and, given the continued advice, support and co-operation of his colleagues at all levels, he believed that, though facing the prospect of difficult times, the nature of their unity and the excellence of their equipment made it possible for them to confront the future with reasonable confidence.

The report and accounts were adopted and the dividend of 7½ per cent. and bonus of 2½ per cent. on the ordinary shares were approved.

The retiring director, Lt.-Colonel John A. T. Barstow, D.S.O., was re-elected, and the remuneration of the auditors, Messrs. Price Waterhouse & Co., having been arranged, the proceedings terminated.

Completion of Woodhead New Pilot Tunnel

Pennine tunnel in connection with Manchester-Sheffield-Wath electrification

On May 16, Mr. J. C. L. Train, Member of the Railway Executive responsible for civil engineering, by pressing an electric button, fired the last shot to connect the Woodhead new pilot tunnel throughout its full length of three miles. This completed the first stage in construction of Woodhead New Tunnel associated with the Manchester-Sheffield-Wath electrification project, concerning which an account appeared in *The Railway Gazette*, February 24, 1950, issue.

Estimated to cost £2,800,000, the new double-line tunnel will supersede the existing twin tunnels, the first of which was built in 1845. Because of age, both have become uneconomical to maintain. Parliamentary powers were obtained in 1947, and work began in the Spring of 1949. After the usual preliminary site works, tunnel driving was begun in the autumn of 1949, and at the same time a shaft was sunk on the open moor midway on the new tunnel line. The pilot tunnel, which is 12 ft.

Front row, on left, Sir William Halcrow, and next to him, Mr. W. Brown of Balfour Beatty & Co. Ltd.; second row, on left, Sir Andrew MacTaggart; at back, in centre, Mr. J. I. Campbell (see article above)

square, is being enlarged to the full section, of width 31 ft. and height 24 ft., before lining with concrete throughout. A length of some 1,300 ft. already has been enlarged.

As was expected, construction of the new tunnel has not been easy; beds of shale intersect the general sandstone formation with more than one ground fault encountered, and much of the tunnel length has had to be supported by steel ribs. Excavation is by blasting, and 300,000 tons of rock have been removed to-date. When the pilot tunnels driven from the foot of the shaft, 467 ft. deep, and from Dunford Bridge, met in April, thus completing the Eastern half of the pilot tunnel, the error in alignment was found to be only just over ¼ in. Other works necessitated by construction of the new tunnel comprise demolition and reconstruction of Woodhead and Dunford Bridge Stations, with new bridges and approaches. The isolated nature of the site entailed provision of accommodation for nearly 1,000 men, and a well-equipped camp, with canteens, cinema, sick bay, post office and other amenities, was built at the Dunford Bridge end. Woodhead New tunnel is due for completion in 1952.

Those present at completion of the pilot tunnel on May 16 included Mr. J. I. Campbell, Civil Engineer, Eastern Region; Sir William Halcrow and Mr. Peter A. Scott, of Sir William Halcrow & Partners, who are acting as Consultant Engineers; and Sir Andrew MacTaggart, Director of Balfour Beatty & Co. Ltd., contractors for the work.

Southern Region Continental Services

Nine different routes to the Continent are provided by the summer services of the Southern Region. The principal new feature is the afternoon service, revived since the war, from London to Paris, leaving Victoria at 4.30 p.m. daily *via* Folkestone/Boulogne, reaching the Gare du Nord at 11.20 p.m., returning from Paris at 3.20 p.m. and arriving Victoria at 10 p.m.; the journey between Boulogne and Paris is made by railcar with limited accommodation, and heavy baggage is not conveyed. Through trains from Boulogne to Switzerland and Austria as usual connect with the 4.30 p.m. from Victoria. There is also a morning service *via* Folkestone/Boulogne daily, leaving Victoria at 9 a.m., due Paris 5.12 p.m., giving also connections with Etaples (for Le Touquet), and elsewhere in Northern France.

The "Golden Arrow" *via* Dover/Calais leaves Victoria at 11 a.m., arriving Paris Nord at 5.52 p.m., and leaves Paris at 12.30 p.m., due Victoria 7.30 p.m. The Folkestone/Calais service leaves Victoria at 2 p.m. daily for Paris and the South of France. In the inward direction this service leaves Paris 8.15 a.m., arriving Victoria 4.5 p.m. The "Night Ferry" London-Paris sleeping-car service *via* Dover/Dunkirk arrives in Paris at 9 a.m. instead of 9.15 a.m., and leaves Paris Nord at 9.45 instead of 9.30 p.m.

Regular Newhaven-Dieppe night sailings give an additional night service to and from Paris during the summer months in addition to the daily normal service, which will be augmented on Saturdays by a special early morning service leaving Victoria at 8.35 a.m., and an additional service will leave Paris St. Lazare at 9.36 a.m. on Sundays. Another night service is provided on the Southampton/Havre route, which is increased from two to three sailings weekly during the season.

On the Southampton/St. Malo direct service, an additional steamer will make possible five sailings weekly in each direction from early July to mid-September. In May and June there will be nine sailings each way, and three sailings weekly in both directions during the latter part of September. The opening of the new lock at St. Malo will enable steamers to enter the port for the first time since 1940, avoiding use of *vedettes* for transfer to and from the roadstead. A feature of the 1951 arrangements for the St. Malo route is conveyance of motorcars.

There will be two daylight services between Victoria and Belgium daily throughout the summer *via* Dover/Ostend, and a special night service will operate from Victoria every Friday and Sunday to Ostend and Brussels, returning from Belgium on Saturday and Monday nights. Through coaches (1st, 2nd, and 3rd class) will run between Ostend and Belgrade in connection with the 10 a.m. service from London.

The Folkestone-Flushing steamer service will again figure in the summer programme from July to September, leaving Folkestone on Mondays and Saturdays, and Flushing on Fridays and Sundays.

Inter-Railway Ambulance Competition

Presentation of awards by Lord Hurcomb

The finals of the national first aid competitions for men and women of British Railways and London Transport Railways were held at the Central Hall, Westminster, on May 18. The results, out of a possible total of 600 marks, were:—

Men:	Marks
Southern Region (Horsham No. 1) ...	520
London Midland Region (Wolverton) ...	513
Western Region (Bristol D.S.O.)	501½
Southern Region (Exmouth Junction No. 1)	491½
Eastern Region (Kings Cross Loco.) ...	475
Eastern Region (Bishopsgate Goods) ...	469
North Eastern Region (York C. & W. No. 1)	455
North Eastern Region (Dewsbury) ...	454
Western Region (Swindon "A") ...	449½
Scottish Region (Motherwell)	431½
London Midland Region (Wyre Dock) ...	430½
London Transport Executive (Railways) (Lots Road)	407½
Scottish Region (Falkirk)	407

The Challenge shield was won by Horsham, and the Corbet Fletcher trophy by Wolverton.

Women:	Marks
London Transport Executive (Railways) ...	408½
London Midland Region (Horwich) ...	384½
Southern Region (Dorking "B") ...	364
Scottish Region (Glasgow)	363½
Western Region (Newton Abbot) ...	360
North Eastern Region (Newcastle Revenue)	333½
Eastern Region (Norwich)	318

The Burrows rose bowl was won by London Transport Executive (Railways).

The Challenge trophies and plaques were presented by Lord Hurcomb, Chairman of the British Transport Commission, who stressed the great debt that the transport services were under to the St. John's Ambulance Association for its co-operation. The British Transport Commission would always give support and encouragement to first aid work. Any transport worker who was qualified in first aid might be able at any moment to render skilled help to a mate.

Also on the platform were Colonel Sir Bertram Ford, Director of the St. John Ambulance Association, Mr. H. A. Marquand, Minister of Health, and Lt.-General Sir Henry Pownall, Vice-Chancellor of the Order of St. John.

Lord Hurcomb, Chairman of the British Transport Commission, presenting the shield to the Southern Region (Horsham No. 1) team

Among those present were:—

Mr. Frank Gilbert, Principal Staff Officer, British Transport Commission; Mr. W. P. Allen, and General Sir Daril Watson, Members, Mr. H. Adams Clarke, Chief Officer (Staff & Establishment), and Dr. H. H. Cavendish Fuller, Chief Medical Officer, Railway Executive; Messrs. C. K. Bird, Chief Regional Officer, Eastern Region; J. W. Watkins, Chief Regional Officer, L.M.R.; Lord Latham, Chairman, and Mr. John Cliff, Member, L.T.E.

Traders' Traffic Conference

The annual meeting of the Traders' Traffic Conference was held at Bristol from May 7-9. Lt.-Colonel H. R. Caulfield-Giles, Chairman, presided, and about 90 members and guests were present.

On May 8, members were the guests of the Bristol Port Authority at Avonmouth Docks, and afterwards there was a luncheon at the Ashton Court Country Club at Failand. Cheddar was visited by motor-coach in the afternoon.

The annual dinner was held in the evening among the guests being the Lord Mayor and Sheriff of Bristol, the President of the Chamber of Commerce, the Chairman & General Manager of the Port of Bristol Authority, and representatives of the Railway Executive and the Road Haulage Executive.

The toast of the City and Port of Bristol was proposed by Mr. B. R. Jones, Transport Manager, Imperial Smelting Corporation Limited, and responded to by the Lord Mayor of Bristol, Alderman F. A. Parish. The toast of the guests was proposed by the Chairman, and responded to by Alderman A. W. S. Burgess, Chairman of the Port of Bristol Authority, and Mr. G. Smart, District Manager of the Road Haulage Executive.

Road Haulage Executive Staff College

At the end of February courses were opened at the Road Haulage Executive Staff College, Watford, and though the promotion courses, which it is intended to hold there, have not yet begun, a series of one-week courses is at present in progress for managers and supervisors already in appointments.

The main purpose of the college, which is situated at the "Grove," the former L.M.S.R. wartime headquarters, will be to assist the Road Haulage Executive with its promotion from within policy. All staff promoted to, or promoted within, the managerial and supervisory grades at groups and depots will attend a course at the college as part of the training for their new duties and refresher courses will also be held there, as well as special conferences.

The present series of conferences for managers and supervisors already in appointments run for five days and include staff from all parts of the country. There are 48 places at the college and those attending are divided into four conference groups of 12. So far nearly 500 senior staff have attended these conferences and it is hoped to complete the programme for 1,500 by the end of the year.

Approximately one-third of the conference time is devoted to talks from Members and Chief Officers of the Executive followed by discussion and questions. For the balance of the time the conference divides into four groups and each discusses various sections of the Management Manual, with a member of the instructional staff acting as chairman. Instructors are seconded for a period from their normal duties and films are shown to illustrate the work of the other Executives of the British Transport Commission.

The conference members share bedrooms, which have either two or four beds, and it is arranged that the members in any one room are about the same age and are from different Divisions. There is a comfortable and spacious lounge. The staff college club provides recreational facilities and a bar.

The Chief Staff & Welfare Officer is responsible to the Executive for the activities of the college and is Chairman of the Sub-Committee of the Chief Officers of the Executive, which acts as a board of management. The Training & Education Officer is Secretary to this sub-committee and is responsible for the administration of policy through the Chief Instructor and the Warden, who are responsible respectively for the instructional activities and for the day-to-day administration of the College.

Contracts & Tenders

The Railway Executive has recently placed the following orders for 20,500 16-ton all-steel mineral wagons:—

Birmingham Railway Carriage & Wagon Co. Ltd.: 1,500.
Butterley Co. Ltd.: 1,200.
Cambrian Wagon Works Limited: 2,500.
Cravens Railway Carriage & Wagon Co. Ltd.: 1,000.
Derbyshire Carriage & Wagon Co. Ltd.: 1,250.
Fairfield Shipbuilding & Engineering Co. Ltd.: 1,700.
Gloucester Railway Carriage & Wagon Co. Ltd.: 1,850.
Head, Wrightson & Co. Ltd.: 1,600.
Hurst, Nelson & Co. Ltd.: 800.
Metropolitan-Cammell Carriage & Wagon Co. Ltd.: 1,350.
P. & W. MacLellan Limited: 1,800.
R. Y. Pickering & Co. Ltd.: 500.
Charles Roberts & Co. Ltd.: 1,250.
Tees-Side Bridge & Engineering Works Limited: 1,850.
G. R. Turner Limited: 350.

A number of contracts placed by the Rhodesia Railways in recent months have been amended as follows:—

Birmingham Railway Carriage & Wagon Co. Ltd.: order for bogie cattle-wagons further increased to 300.

Cravens Railway Carriage & Wagon Co. Ltd.: order for 24 refrigerator vans increased to 34.

S. A. des Ateliers de Construction de Familleureux: order for 100 bogie covered wagons for carrying tobacco, increased to 300.

The contract placed with Beyer, Peacock & Co. Ltd., for 12 "14A" class 2-6-2 + 2-6-2 Beyer-Garratt locomotives has been increased to 18.

EUROPEAN TRAVEL ALLOWANCE.—United Kingdom residents will in future be able to pay in sterling to a booking agent in the United Kingdom for tickets for circular tours in certain European countries without deduction from their travel allowance. Visitors to Britain will be able to buy similar tickets without formality. The countries to which the new arrangements apply include Austria, Belgium, Denmark, France, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the Western Zone of Germany, and Yugoslavia.

SCOTTISH REGION STATIONS TO BE CLOSED.—As from June 4, Beith (North) Station on the Johnstone-Dalry line of the Scottish Region, will be closed, and passenger train parcels and miscellaneous traffic and sundry freight traffic will be dealt with at Beith Station. From June 18, the passenger train service will be withdrawn from Luncarty Station on the main line north of Perth, Drumshoreland Station on the Bathgate-Edinburgh line, and Innerwick and Cockburnspath Stations on the Dunbar-Berwick section of the East coast main line. Passenger train parcels and miscellaneous traffic will continue to be dealt with at Innerwick, Cockburnspath and Drumshoreland Stations, but will be collected and delivered in Luncarty by road motor based on Perth.

London Transport Coach for Tourists

Interior of "RF" type sightseeing coach recently placed in service by London Transport (see paragraph in our May 18 issue)

Notes and News

Foreman of Works Required.—A foreman of works, Ankorbra and Prestea Bridges, is required by the Gold Coast Railway for two tours of 18 to 24 months in the first instance. See Official Notices on page 599.

Peruvian Corporation Limited.—An assistant to the chief of traction, between 26 and 35 years of age, is required for the Peruvian Railways. Knowledge of diesel power an asset. See Official Notices on page 599.

Senior Draughtsman (Civil Engineering) Required.—Applications are invited for the post of senior draughtsman (civil engineering) required by the Nigerian Government Railway, for one tour of 18 to 24 months in the first instance. See Official Notices on page 599.

Assistant Road Transport Superintendent Required.—Applications are invited for the post of assistant road transport superintendent required by the Nigerian Government Railways, for one tour of 18 to 24 months in the first instance, with prospect of permanency. See Official Notices on page 599.

Western Region Summer Services.—In the editorial article on page 519 of our May 11 issue, it was stated that the forthcoming timing of the 8.40 a.m. Paddington-Swansea express of 162 min. to Cardiff, was within 1 min. of the fastest pre-war time. We are reminded that immediately before the war the 6.55 p.m. South Wales express from Paddington had a booked time of 157 min. to Cardiff.

Diesel Locomotives at Mining Conference.—The recent National Colliery Managers' Conference at Harrogate, which was referred to in our May 11 issue, included an exhibition of diesel locomotives for underground working on a variety of gauges by the Locomotive Manufacturers' Association. Hudswell, Clarke & Co. Ltd. exhibited two 100-h.p. locomotives, with a cab and driver's position at each end. The locomotives, which can be coupled to form a tandem unit of 200 h.p. operated by one driver, are 5 ft. 6 in. high and were running on a 3 ft. 6 in. gauge line; each has a Gardner 6-cylinder engine. A new Hunslet Engine Co. Ltd. 45-h.p. locomotive was running on a 2 ft. gauge line; it has two speeds of 5 and 10 m.p.h. forward and reverse and weighs 5 tons in working order. The locomotive exhibited by Ruston & Hornsby Limited weighs 7 tons and has three forward and reverse speeds; it was running on a 3 ft. gauge line. There were a number of show stands in an adjacent marquee, including a display of photographs of underground locomotives by the North British Locomotive Co. Ltd.

Eleven Killed in U.S. Train Crash.—Eleven persons were killed and 51 injured early on May 18 when the Detroit-New York express, the "Red Arrow," of the Pennsylvania Railroad, electrically hauled, ran into the rear coaches of the Pittsburgh-Philadelphia night express near the station at Bryn Mawr, a suburb of Philadelphia, on the Pennsylvania Railroad main line.

Sheffield Twist Drill & Steel Co. Ltd.—The net profit of the Sheffield Twist Drill & Steel Co. Ltd. for 1950 was £190,996 as compared with £84,579 for the previous year after providing £300,115 for tax. Preference and ordinary dividends together absorb £92,583, against £76,542, general reserve receiving £100,000, as compared with nil a year ago. This leaves the carry-forward lower by £1,587, at £24,782.

British Columbia Electric Railway Offer.—The British Columbia Electric Company announces that it contemplates making an offer, on or about June 1, to holders of the debenture and preference stocks of the British Columbia Electric Railway Company, to acquire their holdings in exchange. It states that the offer is a preliminary step to implement a plan of consolidation involving the eventual winding up of the British Columbia Electric Railway.

York Resignalling: Second Stage.—The second stage of the change-over at York from mechanical to colour-light signalling took place last weekend. In consequence from midnight on May 19 until the evening of May 22, some trains from the South, Midlands, and North West, together with the majority of the trains on the York-Harrogate, York-Hull, and York-Pickering branches, started and terminated at stations short of York. Alternative rail or road services were arranged by the North Eastern Region.

Leyland Offer for Albion Motors Shares.—The directors of Albion Motors Limited announce the receipt of a provisional offer from Leyland Motors Limited to acquire the shares of the company. The offer, subject to Treasury consent and other conditions, provides for the issue by Leyland Motors Limited of £1 of 6 per cent. cumulative preference stock for each 6 per cent. preference share of Albion Motors Limited and £4 of ordinary stock for every five ordinary shares. The issued share capital of Albion Motors Limited is £731,266 and that of Leyland Motors Limited is £2,300,000.

Plymouth (Millbay) Docks Transfer.—As from May 21 the administration of Plymouth (Millbay) Docks has been transferred from the Railway Executive to the Docks & Inland Waterways Executive. The docks have been placed under the management of Mr. R. P. Biddle, Docks & Marine Manager, Southampton.

Opening of Tin Research Institute Laboratories.—The Duke of Gloucester will open the new laboratories of the Tin Research Institute at Greenford on May 31. Diplomatic representatives of producing and consuming countries and many distinguished scientists and industrialists will be present. On June 1 the laboratories will be open all day for inspection.

Muir-Hill 14B Dumper.—A modification is announced by E. Boydell & Co. Ltd., Manchester, to the 4½ cu. yd. Muir-Hill 14B dumper. Springs may now be fitted to this machine to improve its performance and legalise the machine for highway use. The springs, which are of the slipper box pattern, are transverse mounted at the front and semi-elliptic at the rear.

New London Midland Region Posters.—A series of three Double-Royal and one Quad-Royal posters has recently been issued by the Public Relations & Publicity Department of the London Midland Region. Two Double-Royal posters show the Pavilion Gardens at Buxton and an aerial view of Morecambe and Heysham, and the third is a map of the Isle of Man, which draws attention to the principal features and places of interest. The Quad-Royal poster also deals with the Isle of Man and shows a coastal view in which a Manx cat is prominent.

Helicopter Service to Birmingham.—When British European Airways open a helicopter service between London and Birmingham on June 1 it will reach an intermediate stage between carrying pas-

Diesel locomotives exhibited at the National Colliery Managers' Conference at Harrogate (see paragraph above)

OFFICIAL NOTICES

Crown Agents for the Colonies

SENIOR DRAUGHTSMAN (Civil Engineering) required by the Nigerian Government Railway for one tour of 18 to 24 months in the first instance. Salary (including expatriation pay) according to qualifications and experience up to £1,207 a year, plus temporary increase up to £90 a year. Outfit allowance £60. Free passages for officer and wife and assistance towards the cost of children's passages. Liberal leave on full salary. Gratuity on satisfactory completion of service. Candidates must have had at least five years experience in the drawing office of a railway civil engineering department (or consulting engineers or contractors with practice in railway work). Knowledge of design and construction details of civil engineering structures and railway track work is required, including ability to take off quantities, prepare estimates and draft general specifications. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M.17417.A on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

MECHANICAL ENGINEER, M.I.Loco.E., 19 years experience British railways, Latin America, steam and diesel traction, speaks Spanish and French, available for technical and/or executive position in any country.—Apply Box 95, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

JUNIOR Traffic Officials with railway traffic apprenticeship experience. Age about 25, single, required for service on railways in Peru and Bolivia. Apply to the Secretary of THE PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

EXPERIENCED Locomotive Draughtsman required for Yorkshire Engine Co. Ltd., Sheffield. Age about 35. Give full particulars of training and experience.

Crown Agents for the Colonies

ASSISTANT ROAD TRANSPORT SUPERINTENDENT required by the Nigerian Government Railways for one tour of 18 to 24 months in the first instance with prospect of permanency. Salary according to age and experience in the scale £711 rising to £1,240 a year (including expatriation pay and temporary allowance). Outfit allowance £60. Free passages for officer and wife and assistance towards cost of children's passages. Candidates (between 30 and 40 years) must have served an apprenticeship to automobile engineering, and have had subsequent experience of transport management (including its commercial aspects), and be capable of assuming responsibility for the operation, maintenance and overhaul of petrol- and diesel-engined vehicles engaged in public transport of both passengers and goods. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M.28589.B on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

THE PERUVIAN CORPORATION LIMITED.—Assistant to Chief of Traction, Peruvian Railways; age 26/35. Qualifications: Apprenticeship with steam locomotive builders or main-line railway workshops, main experience with a locomotive running department. Knowledge of diesel power an asset. Higher National Certificate for Mechanical Engineering or graduate of Institute of Mechanical Engineers. A knowledge of Spanish an advantage. Apply to the Secretary of the PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

DIRECTORY OF RAILWAY OFFICIALS & YEAR BOOK. A useful reference book for railway officers, engineering firms, and all who do business with railways. The only Directory which enables one to find the right railway and the right officer at the right moment. Issued July each year. Price 30s. net. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

Crown Agents for the Colonies

FOREMAN OF WORKS, Ankorbra and Prestea Bridges, required by the Gold Coast Railway for two tours of 18-24 months in the first instance. Commencing salary (including overseas pay and temporary cost-of-living allowance) according to age and experience in scale £834 a year, rising to £920 a year. Gratuity of £25 for each period of three months service payable on satisfactory termination. Outfit allowance £60. Free passages. Candidates must have served an apprenticeship as bricklayer/mason or carpenter/joiner and have had at least seven years subsequent experience in their trade, with specialised experience in bridge construction and renewals. They must be able to supervise labour, read plans, make sketches, draw up short reports, and generally have an all-round knowledge of a Foreman of Works duties. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M.28523.D on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration

FOR SALE.—10 tons 3½ in. × 1 in Hexagon Bolts and Nuts; 10 tons 3 in. × ½ in. Countersunk Round Hexagon Bolts and Nuts; 30 cwts. 2½ in. × ½ in. ditto; 15 cwts. 1½ in. × 5/16 in. ditto. All in new condition.—Write Box 84, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

REQUIRED: Works Manager (Deputy General Manager) for large overseas works engaged in steam locomotive and other heavy engineering construction. Applicants should have held senior executive positions in large heavy engineering workshops and have had experience in all aspects of works management. Age between 36 and 48. Good pay and prospects for suitable man. Write in confidence giving details of education, experience, with present emoluments and salary required to Box 4211, c/o CHARLES BARKER & SONS LTD., 31, Budge Row, London, E.C.4.

sengers from airport to airport and the ultimate aim of direct services between city centres. The first British helicopter passenger service, which ended on March 31, was between the airports serving Cardiff and Liverpool. The London-Birmingham route will be between London Airport and Northolt, at the London end, and a Midlands terminal in a recreation ground at Hay Mills, approximately 2½ miles from the centre of Birmingham. The impending new service will be the first in which helicopters will have to fly under an air traffic control pattern imposed within the crowded air spaces around main-line terminal airports.

Transport Arbitration Tribunal.—A sitting of the Transport Arbitration Tribunal has been arranged for May 28 for the purpose of determining a question arising under Section 40 (4) of the Transport Act, 1947, between Ernest Transport Limited and the Road Haulage Executive.

British Railways Coal and Steel Carryings.—During last weekend British Railways cleared 391,000 tons of coal from deep-mined pits and open-cast sites. The latest figures for iron and steel show that 213,932 tons were conveyed during the week ended May 12 from the principal steelworks.

Measuring Equipment.—The latest addition to the range of measuring equipment produced by Optical Measuring Tools Limited, Slough, consists of a surface projector designed for the projection and measurement of surface contours, such as type faces, matrix punches, and so on, where extremely fine dimensions and form control is essential. Points of design have been considered to give ease and speed of operation, minimum of movement by the operator, and to position the screen carrying the projected image of the work under inspection directly under the eyes of the operator while manipulating the controls. Infinitely variable magnification has been incorporated.

Model Engineer Exhibition.—Railway models will again play a leading part in *The Model Engineer* Exhibition this year, which is to be held at the New Royal Horticultural Hall, Westminster, from August 22 to September 1, and a model railway layout will be a central feature of the Exhibition. A Championship Cup will be offered for the best locomotive in the three classes as follows:—Steam locomotives; locomotive models of "0" gauge and under, and model railway rolling stock and accessories; locomotives of internal combustion and electric type. Silver and

Horwich Works Wins L.M.R. Fire Drill Shield

Mr. J. W. Watkins, Chief Regional Officer, London Midland Region, presenting the L.M.R. first prize to the hydrant drill team of the Horwich Works Fire Brigade

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bronze medals will be offered in these classes and diplomas will be awarded in recognition of special merit. In the Club Team Championship Cup, for the best team of three entries by club members, railway models will compete with marine models and general engineering models.

Road Goods Vehicles: Annual Reports.—Details of the motor goods vehicle fleet in Britain at the end of 1950, excluding vehicles operated by the British Transport Commission, are given in the summary of the annual reports of the Licensing Authorities for Goods Vehicles for 1949-50, published on May 23 by H.M. Stationery Office, price 1s. 6d. During the twelve months the normal statutory licensing procedure was fully restored. The number of applications for "A" and "B" carriers licences showed a marked decrease due mainly to the acquisition of haulage undertakings by the B.T.C. In the majority of traffic areas there was also a substantial reduction in the number of new applications for "C" licences.

Railway Efficiency Committees: Mr. F. Kelland's Address to A.S.L.E.F.—Approval of the "efficiency committees" representing British Railways management and the trades unions which were set up last Spring as the result of the settlement of the railway wage dispute, was expressed by Mr. F. Kelland, President of the Associated Society of Locomotive Engineers & Firemen, in his presidential address on May 22 to the delegate assembly of the Society. In securing the recent wage advance, he stated, they recognised that elimination of waste was essential. The principle was one of which all would approve. The terms of reference were broad, and not restrictive as to any particular section of the industry; and the initiative was not confined to a single party in discussion. Properly utilised, this new departure could provide fresh scope for constructive action of the utmost benefit to the railways and to the advantage of railway workers. In accepting their share of responsibility, all concerned must understand that there could be no limits to the examination that would be required so as to answer all the critics inside and outside the railway world. With it all, they did not believe that readjustment and reorganisation would end the financial stricture that was stifling their industry. The obligations and restrictions laid on the Railway Executive by the Transport Act, 1947, were intolerable, and remedial action was urgently needed. Nevertheless, but for nationalisation, the situation of railway trades unionists would not have been improved to the extent it had been under the present regime.

Forthcoming Meetings

May 26 (*Sat.*).—Stephenson Locomotive Society (Midlands Area), special train tour over routes closed to passenger traffic in the Birmingham district.

May 27 (*Sun.*).—British Railways, Southern Region, Lecture & Debating Society, visit to the *News Chronicle*, at 9 p.m.

May 28 (*Mon.*), to 30 (*Wed.*).—Institution of Electrical Engineers, Savoy Place, London, W.C.2. Conference on "Electrical Instrument Design."

May 30 (*Wed.*).—Railway Students' Association, London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6 p.m. Annual general meeting.

Railway Stock Market

International uncertainties, and particularly the events in Persia, have kept stock markets in check, business in most sections being on a smaller scale, with price movements generally against holders. Financial results continue to bear out hopes of increased dividends although owing to the general market conditions share prices have failed to respond to higher payments. Chairmen in their annual statements are emphasising that rising costs and shortages of materials are making for lower profits this year. Nevertheless the view prevails that leading industrial companies such as Imperial Chemical and Dunlop Rubber would not have increased their dividends unless there were reasonable scope for being able to maintain the higher payments. Many industrial shares still offer quite attractive yields, but some seem somewhat highly priced, bearing in mind that long-dated British Funds now yield rather more than 4 per cent. On the other hand the belief appears to be growing that higher money rates are inevitable owing to the effects of rearmament; and it is argued that in the event of higher money rates British Funds and indeed all classes of fixed interest securities might fall heavily in price by the end of the year.

There has been only very moderate business in foreign rail stocks. Antofagasta preference continued to attract, because of the good yield and dividend arrears, and have strengthened to 54. Antofagasta ordinary was also better at 7⅞. Nitrate Rails shares were 22s. 6d. and Taltal 17s. 10½d. United of Havana stocks came back further in the absence of any further news of nationalisation moves in Cuba. The 1906 debentures were back to 17¼. Elsewhere San Paulo 10s. units strengthened to 14s. 7½d., but there was little business reported in Leopoldina; although there are now reviving hopes that payment of the pay-out money may not be much longer delayed. The ordinary stock was 10¼, the preference 25½, the 4 per cent. debentures 93½, and the 6½ per cent. debentures 139. Manila issues attracted selling by tired holders who feel that the stocks must still be regarded mainly as a long-term speculation. The "A" bonds were 70 and the preference shares 6s. 6d. Bolivar "C" debentures were 58 and La Guaira ordinary stock 84½. Dorada Railway stock has changed hands up to 75 and Costa Rica stock around 4. White Pass Yukon income debentures marked 86½.

Canadian Pacifics came back with other dollar stocks and are being dealt in around 53½. The 4 per cent. preference and debenture stocks were 71½ and 92½. French railway sterling bonds remained steady with Midi and Orleans both at 89½. Mexican rails turned easier; Mexican Central "A" bonds were 61½.

Road transport shares were generally little changed, with Southdown at 102s. 6d., Lancashire Transport 61s. 3d., and West Riding 57s. Despite market talk of higher dividend prospects B.E.T. deferred stock has reacted to £535 at the time of going to press.

Engineering and kindred shares also reflected the general trend of markets, but price movements were mostly not more than a few pence. Babcock & Wilcox were back to 81s., but held most of the rise which followed the higher dividend. Guest Keen have been relatively steady at 62s. 4½d.; the price carries the proposed 5s. per share payment arising from nationalisation compensation for steel assets. Vickers have fluctuated moderately around 52s. 3d., awaiting the annual meeting, when information may be forthcoming as to when Vickers can decide on how to deal with its English Steel compensation. The market believes that a decision may have to be left until the question has been settled of hiving-off from nationalisation certain English Steel assets. T. W. Ward, at 75s., have lost a small part of their recent advance although the market is talking of higher dividend possibilities. B.S.A. at 43s. 1½d. fell back sharply.

Imperial Chemical at 50s. were steady, helped by the full report and accounts, which confirm the excellent impression created by the preliminary profit figures and the raising of the dividend from 10 to 12 per cent. Group sales expanded further both in value and volume in 1950 and total value of sale to customers were at the record of £220,800,000.

Locomotive engineering and kindred shares have been fairly steady, with Hurst Nelson at 62s., and Birmingham Wagon 39s., while Vulcan Foundry were 31s. 3d. North British Locomotive were dealt in around 21s., Beyer Peacock were 31s. 4½d., Gloucester Wagon 17s. 3d., Wagon Repairs 16s. 1½d., and G. D. Peters 18s. 3d. Charles Roberts eased to 99s. 6d.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1949/50	No. of week	Aggregate traffics to date: Total 1950/51	Aggregate traffics to date: Increase or decrease
South & Cen. America	Antofagasta ...	811	11.5.51	£ 152,270	+ £ 85,710	19	£ 2,024,510	+ £ 816,880
	Costa Rica ...	281	Mar., 1951	c462,742	– c528,918	39	c8,838,481	+ c1,242,019
	Dorada	70	Mar., 1951	34,235	– 14,231	13	108,108	– 18,363
	Inter. Ctl. Amer. ...	794	Mar., 1951	$1,204,306	– $106,082	13	$3,753,109	– $25,546
	Paraguay Cent. ...	274	11.5.51	£253,610	+ £54,268	44	£9,314,291	+ £2,663,494
	Peru Corp. ...	1,050	Apr., 1951	$7,726,000	+ $3,463,000	43	$76,397,000	+ $18,736,942
	" (Bolivian Section)	66	Apr., 1951	Bs. 16,036,000	+ Bs.5,871,500	43	Bs. 126,503,000	+ Bs. 28,991,336
	Salvador	100	Mar., 1951	c236,000	+ c60,000	39	c1,563,000	+ c87,000
	Taltal	154	Mar., 1951	$2,091,357	+ $308,104	39	$14,688,148	+ $2,461,284
Canada	Canadian National†	23,473	Apr., 1951	16,818,000	+ 2,159,000	17	64,458,000	+ 10,909,000
	Canadian Pacific† ...	17,037	Mar., 1951	11,502,000	+ 759,000	13	32,736,000	+ 5,010,000
Various	Barsi Light* ...	167	Mar. 1951	33,150	+ 3,420	52	350,745	– 3,225
	Egyptian Delta ...	607	10.10.50	18,245	+ 1,296	28	319,911	– 24,005
	Gold Coast ...	536	Feb., 1951	277,776	+ 42,991	48	2,852,499	+ 303,619
	Mid. of W. Australia	277	Feb., 1951	39,170	+ 8,636	35	316,384	+ 74,289
	South Africa ...	13,347	21.4.51	1,876,463	+ 268,591	3	5,712,431	+ 1,226,028
	Victoria	4,744	Jan., 1951	1,990,981	– 9,278	31	—	—

* Receipts are calculated at 1s. 6d. to the rupee † Calculated at $3 to £1